

Kristin E. N. Watt

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EDUCATION:

University of Kansas Medical Center

Ph.D., *with honors*, Cell Biology and Anatomy

Advisor: Paul Trainor, Ph.D.

Dissertation: "The roles of RNA Polymerase I and III subunits Polr1a, Polr1c, and Polr1d in craniofacial development."

Kansas City, KS

2016

Iowa State University

BS, *Summa Cum Laude*, Major in Genetics, Minor in Psychology

Ames, IA

2009

RESEARCH EXPERIENCE:

Stowers Institute for Medical Research

Postdoctoral Researcher; Advisor: Paul Trainor

Kansas City, MO

2016 - present

Current research involves generating mouse models for Acrofacial dysostosis, Cincinnati type using a conditional allele of *Polr1a*. Additional projects include determining Polymerase I and III function during zebrafish development relating to the pathogenesis of leukodystrophy and craniofacial malformations.

University of Kansas Medical Center/Stowers Institute

Graduate Research Assistant; Advisor: Paul Trainor

Kansas City, KS/MO

2010 - 2016

Research conducted on zebrafish craniofacial development. Zebrafish with mutations in *polr1a*, *polr1c*, and *polr1d* were examined as models for Acrofacial dysostosis, Cincinnati type (*polr1a*) and Treacher Collins syndrome (*polr1c* and *polr1d*).

Iowa State University

Research Assistant, Essner Lab, Genetics, Development, and Cell Biology Dept.

Ames, IA

2009 - 2010

Iowa State University

Undergraduate Research Assistant, Nutritional Physiology Lab

Ames, IA

2006 - 2009

Iowa State University

Summer Intern, Program for Women in Science and Engineering

Ames, IA

2006

GRANTS & AWARDS:

Grants:

"*polr1c* and *polr1d* mutant zebrafish as new models for Treacher Collins syndrome."

2013-2015

F31 Ruth Kirschstein Pre-Doctoral National Research Service Award

National Institute of Dental and Craniofacial Research, F31DE023017.

Travel Awards:

Society for Craniofacial Genetics and Developmental Biology Postdoc Travel Award to attend the Gordon Research Conference on Neural Crest Cells and Placodes	2019
Cardiovascular Systems Travel Award Travel award for the Hilde Mangold Postdoctoral Symposium	2017
Stowers Institute for Medical Research Travel Award Student Travel Award to attend the International Zebrafish Meeting	2014

Presentation Awards:

Society for Craniofacial Genetics and Developmental Biology <i>Genesis</i> postdoctoral poster award	2018
Society for Craniofacial Genetics and Developmental Biology Award Second place postdoctoral poster award	2017
Stowers Institute for Medical Research Young Investigator Science Retreat Award First place predoctoral oral presentation award	2015
KUMC Student Research Forum Award Second place graduate student oral presentation	2015
Society for Craniofacial Genetics and Developmental Biology Award First place predoctoral poster award	2014
KUMC Student Research Forum Award First place graduate student oral presentation	2013

TEACHING EXPERIENCE:

Guest lectures:

- "Skeletal Development," Stowers Graduate School, 2016-present
- "Zebrafish as a model system," Rockhurst University, Molecular Genetics, 2017
- "Pharmacogenomics," Kansas DNA Day, Olathe East High School, 2017

Lab assistant: Stowers Graduate Program Developmental Biology Module: 2013 - present

Student mentoring:

- PhD rotation students: Sirma User (2017), Joaquin Navajas Acedo (2014)
- Master's Student: Elena Gallego Tejeda (2015)
- Undergraduate Clinical Sciences Program, KUMC: Liz Humphries (2019), Emily Weisen (2015), Angela Newton (2014), Nikki Sambol (2012)
- Stowers Summer Scholar Program: Cynthia Bezier (2017), Anna Segu (2017), Zack Tannebaum (2014), Stephanie Bouffard (2013)

SERVICE:

Organizer, Translational Research Seminar Series. 2017-present

INCLUSION & DIVERSTIY ACTIVITIES:

Seminars and Workshops:

- Race in the Workplace: KU's Workplace Culture Summit, 2020
- Confronting Bias in Scientific Language, Society for Developmental Biology, 2020
- Engaging your team, workshop led by Leigh Branham, Stowers Institute, 2019
- Women in Science, Gordon Research Conference Power Hour, Lucca, Italy 2019
- Implicit Bias, seminar led by Christopher Dial, Stowers Institute, 2017

Volunteering:

- Children's Therapeutic Learning Center, Kansas City, MO, 2011
- Assault Care Center Extending Shelter and Support (ACCESS), Ames, IA, 2008-2009

EXTENDED COURSEWORK:

Data Science in Python

Stowers Institute for Medical Research, Kansas City, MO

October 2020

Course covered an introduction to coding in Python, manipulating large data sets with Pandas, and visualizing data with Seaborn.

Pediatric Genomic Medicine Master Class

Children's Mercy Hospital, Kansas City, MO

October 2016

Course covered types of genetic testing, genome sequencing, sequence alignment, and guidelines for variant interpretation. In the second half of the course, we analyzed our own sequencing data for the presence of damaging variants, discussed returning results to patients, and ethical issues related to sequencing data.

Teaching in Higher Education

September-December 2014

University of Kansas Medical Center, Kansas City, KS

Course topics included instructional methods, assessment, providing feedback, and designing educational programs at the post-secondary level. Completed a teaching philosophy, syllabus, lesson plan, and lecture.

Working with the Zebrafish Genome

International Zebrafish Conference, Madison, WI

June 2014

Course topics included manual genome annotation, using various genome browsers, methods of identifying disease relevance, comparative sequence analysis, and an introduction to several genomic resources for zebrafish.

Craniofacial Anatomy

University of Kansas Medical Center, Kansas City, KS

June 2013

Couse included didactic instruction on brain and craniofacial anatomy as well as a cadaver dissection lab.

REVIEW ARTICLES:

Noack Watt KE, Trainor PA. 2014. Chapter 17 - Neurocristopathies: The Etiology and Pathogenesis of Disorders Arising from Defects in Neural Crest Cell Development. In: Trainor PA, editor. Neural Crest Cells. Boston: Academic Press. p 361-394.

PUBLICATIONS:

Terrazas-Falcon K*, **Watt KEN***, Dash S*, Achilleos A, Zhao R, Sakai D, Levy M, Sardu M, Moore E, Fitriasari S, Bugarinovic G, Li L, Tsuchiya D, Unruh J, Shiang R, Dixon M, Dixon J, Trainor PA. (in preparation) Tissue-specific requirements for ribosomal RNA transcription influence craniofacial development.

Watt KEN, Neben C, Hall S, Merrill A, Trainor PA. 2018. *tp53*-dependent and independent signaling underlies the pathogenesis and possible prevention of Acrofacial Dysostosis - Cincinnati type. *Human Molecular Genetics* 27(15):2628-2643.

Noack Watt KE, Achilleos A, Neben C, Merrill A, Trainor PA. 2016. The Roles of RNA Polymerase I and III Subunits Polr1c and Polr1d in Craniofacial Development and in Zebrafish Models of Treacher Collins Syndrome. *PLoS Genetics* 12(7):e1006187.

Weaver KN*, **Noack Watt KE***, Hufnagel RB, Navajas Acedo J, Linscott LL, Sund KL, Bender PL, König R, Lourenco CM, Hehr U, Hopkin RJ, Lohmann DR, Trainor PA, Wieczorek D, Saal HM. 2015. Acrofacial Dysostosis, Cincinnati Type, a Mandibulofacial Dysostosis Syndrome with Limb Anomalies, Is Caused by POLR1A Dysfunction. *The American Journal of Human Genetics* 96(5):765-774. (*co-first authors)

Aoto K, Sandell LL, Butler Tjaden NE, Yuen KC, **Noack Watt KE**, Black BL, Durnin M, Trainor PA. 2015. Mef2c-F10N enhancer driven β -galactosidase (LacZ) and Cre recombinase mice facilitate analyses of gene function and lineage fate in neural crest cells. *Developmental Biology* 402(1):3-16.

Nafikov RA, Schoonmaker JP, Korn KT, **Noack K**, Garrick DJ, Koehler KJ, Minick-Bormann J, Reecy J, Spurlock DE, Beitz DC. 2013. Sterol regulatory element binding transcription factor 1 (SREBF1) polymorphism and milk fatty acid composition. *Journal of Dairy Science* 96, 2605-2616.

Liao H-K, Wang Y, **Noack Watt KE**, Wen Q, Breitbach J, Kemmet CK, Clark KJ, Ekker SC, Essner JJ, McGrail M. 2012. Tol2 gene trap integrations in the zebrafish amyloid precursor protein genes *appa* and *aplp2* reveal accumulation of secreted APP at the embryonic veins. *Developmental Dynamics* 241(2):415-425.

McGrail M, Hatler JM, Kuang X, Liao H-K, Nannapaneni K, **Noack Watt KE**, Uhl JD, Largaespada DA, Vollbrecht E, Scheetz TE, Dupuy AJ, Mostetter JM, Essner JJ. 2011. Somatic Mutagenesis with a Sleeping Beauty Transposon System Leads to Solid Tumor Formation in Zebrafish. *PLoS ONE* 6(4):e18826.

McGrail M, Batz L, **Noack K**, Pandey S, Huang Y, Gu X, Essner JJ. 2010. Expression of the zebrafish CD133/prominin1 genes in cellular proliferation zones in the embryonic central nervous system and sensory organs. *Developmental Dynamics* 239(6):1849-1857.

PROFESSIONAL ASSOCIATIONS:

Society for Developmental Biology
Society for Craniofacial Genetics and Developmental Biology
The American Society of Human Genetics

CONFERENCE PRESENTATIONS:

Talks:

- 2019 "A role for ribosome biogenesis in neuronal development and myelination." ASBMB Special Symposia on Emerging Roles for the Nucleolus, Kansas City, MO.
- 2019 "RNA Polymerase I versus III function in neural crest cells, neuronal development, and myelination." Midwest Meeting of the Society for Developmental Biology, Case Western Reserve University, Cleveland, OH.

- 2019 "The roles for RNA Polymerase I subunit POLR1A in neural crest cells and development." GRS on Neural Crest Cells and Placodes, Lucca, Italy.
- 2018 "The role for ribosome biogenesis in disorders of craniofacial development." Pediatric Genomics, Kansas City, MO.
- 2017 "Global processes and tissue specific effects: understanding the role of ribosome biogenesis in craniofacial development." ASBMB Special Symposia on Emerging Roles for the Nucleolus, Kansas City, MO.
- 2017 "RNA Polymerases I and III function in craniofacial development and disease." Hilde Mangold Postdoctoral Symposium, Society for Developmental Biology, Minneapolis, MN, 2017.
- 2017 "Understanding the pathogenesis and prevention of Acrofacial Dysostosis, Cincinnati type." Sixth Annual Craniofacial and Skin Sciences Research Symposium, Cincinnati, OH.
- 2016 "RNA Polymerase I subunits Polr1a, Polr1c, and Polr1d are required for craniofacial development." Society of Craniofacial Genetics and Developmental Biology, Boston, MA.
- 2014 "The roles of RNA polymerase subunits Polr1c and Polr1d in craniofacial development and the pathogenesis of Treacher Collins syndrome." GRC on Craniofacial Morphogenesis and Tissue Regeneration, Lucca, Italy.
- 2012 "The RNA polymerase subunits Polr1c and Polr1d play critical roles in craniofacial development and the pathogenesis of Treacher Collins syndrome." GRS on Craniofacial Morphogenesis and Tissue Regeneration, Ventura, CA.

Posters:

- 2020 "Understanding RNA Polymerase III transcription in cranial neural crest cell development." Society of Craniofacial Genetics and Developmental Biology, online.
- 2020 "RNA Polymerase I and III function in neural crest cells and neuronal development." Society for Developmental Biology Meeting, online.
- 2018 "The role for ribosome biogenesis in disorders of craniofacial development." The American Society of Human Genetics, San Diego, CA.
- 2018 "Understanding tissue specific roles for POLR1A in the pathogenesis of Acrofacial Dysostosis, Cincinnati type." Society of Craniofacial Genetics and Developmental Biology, La Jolla, CA.
- 2017 "Understanding the pathogenesis and prevention of Acrofacial Dysostosis, Cincinnati type." Society of Craniofacial Genetics and Developmental Biology, Minneapolis, MN.
- 2017 "Understanding the etiology and pathogenesis of craniofacial syndromes caused by mutations in subunits of RNA Polymerase I." Pediatric Genomic Medicine and Precision Therapeutics Conference. Kansas City, MO.
- 2016 "The roles of RNA Polymerase I and III subunits Polr1c and Polr1d in zebrafish models of Treacher Collins syndrome." Society for Developmental Biology, Boston, MA.
- 2014 "Examination of the roles of RNA Polymerase I subunits during craniofacial development." Society of Craniofacial Genetics and Developmental Biology, La Jolla, CA.
- 2014 "Examining the roles of RNA Polymerase subunits Polr1c and Polr1d in Treacher Collins syndrome and craniofacial development." International Conference on Zebrafish Development and Genetics, Madison, WI.

- 2014 "Investigation of the roles of RNA polymerase subunits Polr1c and Polr1d in craniofacial development and the pathogenesis of Treacher Collins syndrome." Capitol Research Forum, Topeka, KS.
- 2013 "The roles of RNA polymerase I subunits Polr1c and Polr1d in craniofacial development and Treacher Collins syndrome." Society of Craniofacial Genetics and Developmental Biology, Boston, MA.
- 2013 "Investigation of the roles of RNA polymerase subunits Polr1c and Polr1d in craniofacial development and the pathogenesis of Treacher Collins syndrome." FaceBase Annual Meeting, University of Iowa, Iowa City, IA.