Sean Johnsen

PhD Student · Genetics and Molecular Biology

University of North Carolina at Chapel Hill

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Education

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

PhD Genetics and Molecular Biology — *August 2020 - present*

- Advisor: Dan McKay

Northeastern University — *Boston, MA*

BS Biology and Computer Science — *August 2014 - May 2019*

- Matz Biotechnology Fellow

Research Experience

University of North Carolina at Chapel Hill, Dept. of Genetics — *Chapel Hill, NC*

Advisor: Dr. Daniel McKay — *Aug. 2020 - Present*

- **Thesis Work**: Uncovering novel regulatory inputs to *de novo* Polycomb domain formation during early *Drosophila* embryogenesis.

Northeastern University, Dept. of Biology — *Boston, MA*

Advisor: Dr. Javier Apfeld — *2017-2020*

- Honors Thesis: "Automated ratiometric imaging and genetic engineering reveal sub-cellular redox dynamics in the *C. elegans* pharyngeal muscle."
- Built an end-to-end image-analysis pipeline in Python + MATLAB that registers ratiometric fluorescence images of *C. elegans* pharyngeal muscle and streams the output into a reproducible data-management framework.

Publications

Stanley, J.A., **Johnsen, S.B.** Apfeld, J. The SensorOverlord predicts the accuracy of measurements with ratiometric biosensors. Sci Rep 10, 16843 (2020). https://doi.org/10.1038/s41598-020-73987-0

Schiffer, J. A., Servello, F. A., Heath, W. R., Amrit, F. R. G., Stumbur, S. V., Eder, M., Martin, O. M., **Johnsen, S.B.**, Stanley, J. A., Tam, H., Brennan, S. J., McGowan, N. G., Vogelaar, A. L., Xu, Y., Serkin, W. T., Ghazi, A., Stroustrup, N., Apfeld, J. (2020). Caenorhabditis elegans processes sensory information to choose between freeloading and self-defense strategies. ELife, 9. https://doi.org/10.7554/elife.56186

Awards, Fellowships, & Grants

2018 **Matz Biotechnology Fellowship**, Northeastern University

Presentations

** presenting author; + mentored undergraduate*

Contributed Presentations

Johnsen, Sean*. 2018. Elastic registration for error reductioon in ratiometric imaging in C. elegans. Matz Biotechnology seminar: Northeastern University, Boston, MA.

Johnsen, Sean*, Javier Apfeld. 2019. Precise glutathione redox potential measurement in individual feeding muscles of the nematode C. elegans. Poster: 22nd International C. elegans conference, Los Angeles, CA.

Sarah Aleman*+, **Sean Johnsen**, Daniel McKay. 2015. Poster: SURF Poster Festival, Chapel Hill, NC.

Johnsen, Sean*, Daniel McKay. 2021. Dissecting the initiation of Polycomb Regulation during Early Drosophila embryogenesis. Poster: 62nd Annual Drosophila Research Conference.

Johnsen, Sean*, Daniel McKay. 2022. Dissecting the initiation of Polycomb Regulation during Early Drosophila embryogenesis. Poster: 63rd Annual Drosophila Research Conference.

Johnsen, Sean*, Daniel McKay, Mary Leatham-Jensen. 2024. Dissecting the initiation of Polycomb Regulation during Early Drosophila embryogenesis. Poster: The Allied Genetics Conference.

Professional Experience

TripAdvisor *Needham, MA*

Software Engineering Intern *June 2016 - December 2016*

- Built a Python-based monitoring pipeline that ingested high-volume security logs, ran rule-based anomaly detection, and pushed real-time PagerDuty/Slack alerts—cutting incident-detection latency from hours to minutes and replacing a patchwork of manual scripts.

TripAdvisor *Needham, MA*

Blah Blah Blah *June 2016 - December 2016*

- Built a Python-based monitoring pipeline that ingested high-volume security logs, ran rule-based anomaly detection, and pushed real-time PagerDuty/Slack alerts—cutting incident-detection latency from hours to minutes and replacing a patchwork of manual scripts.