

# JESSICA JONES

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## SUMMARY

8+ years of experience in neuroscience and data science, skilled in machine learning models and visualization tools to extract insights from complex biological data. Deep understanding of experimental design and Python-based analytics to support data-driven discovery in biotech and precision medicine. Integrating agentic workflows to expedite productivity, advance portfolios, and enhance research.

## SKILLS

**Wetlab:** Perfusion and Fixing Dissection, IHC/in situ RNA-scope protocol, scRNAseq transcriptomics, FACs sorting and analysis, Animal Handling, Genotyping, Phenotypic Characterization

**Backend:** NumPy, pandas, FastAPI, httpx, biopython, SQLite/Alchemy, pydantic, logging, batch processing, git

**Frontend:** React 18+, D3.js, Typescript, Vite, seaborn, matplotlib, TanStack, tailwind/post CSS, networkx, plotly, altair, webGL

**Hardware:** NI-DAQ, Arduino, Raspberry Pi, Simulink

**Management:** Laboratory Safety Coordination, Project

Management, Cross-Functional Team Leadership, Research Mentorship, Cross-Lab Communication

**Machine Learning:** TensorFlow, PyTorch, Scikit-learn, OpenCV, keras, DeepLabCut, sLEAP

## EDUCATION

**Ph.D. Neurobiology and Biophysics**, University of Washington, Sept. 2025

- **Courses:** *Computational Methods for Data Analysis (AMATH 582)*, *Quantitative Methods in Neuroscience (NEURO 582)*, *Data Visualization (CSE 512)*

**B.S. Molecular, Cell, Developmental (MCD) Biology**, University of California, Santa Cruz, June 2017

- **Awards:** *2025 SMDP Biotech Scholar*, *2022 HHMI Gilliam Fellowship Recipient*, *2022 NSF-GRFP Honorable Mention*, *2020 NIH T32 Predoctoral Training Program in the Neurosciences*, *2017 NIH IMSD Scholar Award Recipient*

## WORK EXPERIENCE

**Senior Scientific Software Engineer, Visualization, Genentech, Dec 2025 – Present**

- Architected full-stack data visualization platforms combining FastAPI backend with React frontend, implementing real-time genomic association queries with support for multiple search modalities and batch processing of large-scale datasets
- Built a full-stack clinicogenomic real-world data portal using React, TypeScript, FastAPI, MongoDB, and ClickHouse, enabling researchers to define oncology cohorts, compare clinical/genomic features, and visualize survival, biomarker, treatment, and demographic outcomes.
- Designed dynamic ontology mapping system enabling automatic categorization of 4000+ phenotypes
- Optimized data query performance through batch processing architecture (200-variant chunks, 10k-annotation segments) and implemented efficient filtering/pagination logic, reducing memory footprint and enabling smooth visualization of large association datasets
- Built interactive visualization layer using D3.js SVG rendering with hybrid WebGL architecture exploration, enabling filtering and plot implementation

**Research Associate**, University of Washington, Aug 2020 – Present

- Analyzed large-scale connectome and single-cell RNA-seq data
- Implemented machine learning models for neuronal circuit tracing
- Engineered computer vision algorithms for behavioral tracking
- Taught and mentored students in neurobiology and biophysics, and presented at major conferences

**Research Specialist**, University of Pennsylvania, Aug 2018 – Aug 2020

- Led the development of an automated motor reflex tracking system using ML/computer vision,
- Built a statistical modeling package for pain-state assessment, reducing manual analysis time by 98%;
- Mentored REU students and published methodology in eLife, and presented a nanosymposium at SFN

**Research Assistant**, University of California Santa Cruz, June 2017– Aug 2018

- Developed behavioral equipment and Python analysis code to study rodent physiological states,
- Engineered reporter genes to investigate alternative splicing in *S. cerevisiae*,
- Gained expertise in DNA manipulation using addgene bioinformatics software.

## PROJECTS

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**Jr. Scientist Intern**, Champalimad Centre for the Unknown, Lisbon, PT, June 2022

*Project: “Agent-based models for simulating fruit fly behavior”*

- Engineered ML models for unsupervised behavioral classification,
- Created behavioral tracking systems using computer vision
- Built 3D-printed arenas and open-source tools for behavioral analysis.

**Rotation Student**, Ajay Dhaka Lab, University of Washington, Seattle, WA, Jan 2021 - March 2021

*Project: “Investigating thermal preference plasticity in larval *Danio rerio*”*

- Acutely altered rearing conditions to shift temperature preference and discovered specific brain regions that contribute to valence assignment via phosphoERK
- Developed computer vision and image processing tools to quantify and assess zebrafish behavior in response to noxious heat or cold stimuli

**Rotation Student**, Garret Stuber Lab, University of Washington, Seattle, WA, Aug 2020 – Dec 2020

*Project: “Improvements in taste reactivity quantification/classification in mouse models”*

- Recorded mouse responses to salt across homeostatic states using oral-facial video tracking
- Used two-photon imaging in tandem with spatial light modulation to record GABA and Glutamate in the lateral habenula (LHA) to see relationship between affective states and LHA activity
- Built a machine learning classifier to accurately distinguish taste reactivity behavioral markers from one another in shifted internal states (i.e. different molarities of sucrose, salt, and quinine)

## PUBLICATIONS

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**Jones, J.M.\***, Cook, A., Sustar, A., Walling-Bell, S., Chou, G., Tuthill, J.C., Neural circuits underlying nociceptive behavior in adult *Drosophila*. bioRxiv (2025) [doi:10.1101/2025.10.28.684868](https://doi.org/10.1101/2025.10.28.684868)

Bates, A. S., Phelps, J.S., Kim, M., Yang, H.,..., **Jones JM**,..., *et al.* Distributed control circuits across a brain and-cord connectome. bioRxiv (2025). [doi:10.1101/2025.07.31.667571](https://doi.org/10.1101/2025.07.31.667571)

Toussaint AB, Foster W, **Jones JM\***, et al. Chronic paternal morphine exposure increases sensitivity to morphine-derived pain relief in male progeny. *Sci Adv.* 2022;8(7):eabk2425. [doi:10.1126/sciadv.abk2425](https://doi.org/10.1126/sciadv.abk2425)

**Jones JM\***, Foster W\*, Twomey CR\*, et al. A machine-vision approach for automated pain measurement at millisecond timescales. *Elife.* 2020. [doi:10.7554/eLife.57258](https://doi.org/10.7554/eLife.57258)

Abdus-Saboor I\*, Fried NT\*,..., **Jones JM**, ...et al. Development of a Mouse Pain Scale Using Sub-second Behavioral Mapping and Statistical Modeling. *Cell Rep.* 2019. [doi:10.1016/j.celrep.2019.07.017](https://doi.org/10.1016/j.celrep.2019.07.017)

## TEACHING and MENTORING

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**Summer Research Mentor**, University of Washington, Seattle, WA, June 2022 – Aug 2023

*Program: Center for Neurotechnology's Research Experience for Undergraduates (REU)*

Trainees: Simone Pico Rodriguez (2022), Sara Pierce (2023, co-mentored)

**Graduate Teaching Assistant**, University of Washington, Seattle, Aug 2021 – Jan 2022

*Course: Introduction To Systems and Behavioral Neuroscience (NEUSCI 302)*

Responsibilities: Design laboratory lecture content focused on introducing neurobiological concepts, facilitate hands-on research projects, mentor students in writing lab reports, and provide guidance to those that might be on the fence about pursuing neuroscience. 28 students, 4.8/5 rating

**Summer Research Mentor**, University of Pennsylvania, Philadelphia, PA, May 2019 – September 2019

*Program: SUIP Diversity Action Plan for PENN Genomics (DAPPG)*

Trainees: Racquel Amadi, Synphane Gibbs (co-mentored, PhD student at University of Virginia)