Ian Rachmiel Jones, Ph.D.

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SUMMARY

I am a recent PhD. graduate with expertise in next generation sequencing, functional genomics, molecular biology, and bioinformatics. I am interested in applications at the intersection of genomics and drug discovery to advance human health.

SKILLS

- **Computational:** Python (Pandas, NumPy), Unix, R (DeSEQ2, SEURAT, GKM-SVM, MAGeCK), Samtools, NGS Analysis, High Performance Computing, AWS S3, Machine Learning, GitHub, JupyterLab, CRISPR Screens
- **Benchwork:** Library construction (RNA-seq, ATAC-seq, CUT&RUN/CUT&TAG, Hi-C/Hi-ChIP), Reporter Assays, Lentiviral Transfection, Cell Culture, iPSC models, Next Generation Sequencing, PCR/qPCR, Molecular Cloning

EDUCATION

University of California, San Francisco | Advisor: Yin Shen
Ph.D. in Pharmaceutical Sciences and Pharmacogenomics — *Sep 2019 – Jun 2025*

University of California, Berkeley
Bachelor of Arts in Molecular Cellular Biology, Emphasis in Genetics — *Aug 2013 – May 2017*

EXPERIENCE

University of California, San Francisco — **San Francisco, CA**
Graduate Student Researcher, Shen Lab — *Sep 2019 – Jun 2025*

- Leveraged genome-wide CRISPRi screens to identify thousands of cis-regulatory elements essential for iPSC fitness and cell survival during neuronal differentiation
- Optimized and assessed the quality of RNA-seq, ATAC-seq, and Hi-ChIP assays from 3rd trimester, neonatal, and adolescent human cortical samples that led to successful library preparation with less starting material
- Used support vector machine learning models to prioritize schizophrenia risk variants in human primary brain cells, and subsequently validated predicted enhancer function using mouse transgenic assays
- Mentored UC Berkeley undergraduate student thesis that prioritized GWAS variants with machine learning
- Collaborated with 5+ publications outside of thesis work

R Bootcamp Instructor — *Aug 2020 – Aug 2022*

- Led an introduction course on R programing language and biostatistics for incoming graduate students

Teaching Assistant — *Jan 2021 – Mar 2021*

- Assisted with Systems Pharmacology course teaching computational modeling and quantitative data analysis

Junior Specialist, Shen Lab — *Jun 2017 – Aug 2019*

- Generated and analyzed RNA-seq, ATAC-seq, Hi-C, PLAC-seq, and CUT&RUN libraries
- Mentored local high school students through Lowell Student Research Program

University of California, Berkeley — **Berkeley, CA**
Lab Assistant, Garbelotto Lab — *Aug 2015 – May 2017*

- Identified and genotyped Phytophthora and presented educational talks to local nurseries

Lab Assistant, Glass Lab — *Aug 2015 – May 2017*

- Engineered regions of zinc binuclear cluster transcription factors required for cellulase secretion in N. crassa

Pacific Northwest National Lab/DOE — **Richland, WA**
SULI Summer Intern — *Jun 2015 – Aug 2015*

- Optimized transformation of L. starkeyi and determined the promoter strength using the reporter GUS

PRESENTATIONS

4DN 2024 Annual Meeting — **La Jolla, CA**

- 3D-epigenomic Characterization of Regulatory Elements, Neuropsychiatric Risk Variants, and Human Accelerated Regions in the Developing Human Cortex

4DN 2023 Annual Meeting — **Boston, MA**

- Functional Characterization of Gene Regulatory Elements and Neuropsychiatric Disease-Associated Risk Loci in iPSCs and iPSC-Derived Neurons

4DN Hackathon — ***Seattle, WA***

- Unveiling the role of epigenomic features on RNA splicing throughout neural development using machine learning.

PUBLICATIONS

Jones, I. R.*, Wang, L.*, Kosicki, M., Battle, S. L., Narayan, V. J., Bi, Q., Gemenes, K., Zhou, L., Song, M., White, M., Olson, W., Beuchat, G., Dickel, D., Li, Y., Hawkins, R. D., Pennacchio, L. A., Kriegstein, A., & Shen, Y. (2025). 3D-epigenome of Glial Cell Types in Developing Human Cortex. [Under review in Nature]

Yang, X.*, **Jones, I. R.***, Chen, P. B.*, Yang, H.*, Ren, X.*, Zheng, L., ... & Shen, Y. (2025). Functional characterization of gene regulatory elements and neuropsychiatric disease-associated risk loci in iPSCs and iPSC-derived neurons. *bioRxiv*, 2023-08. https://doi.org/10.1101/2023.08.30.555359 [Under the 2nd round review in Nature]

Wang, J.*, **Jones, I. R.***, Wang, L.*, Bi, Q., Gemenes, K., Narayan, V. J., M., White, Choi, J. J., Wen, J., Li, Y., Huang, Eric., Kriegstein, A., & Shen, Y. (2025). Kriegstein, A., & Shen, Y. Cell type- and temporal-specific 3D epigenome and RNA splicing during human cortical development. [In prep.]

Cui, X., Yang, H., Cai, C., Beaman, C., Yang, X., Liu, H., Ren, X., Amador, Z., **Jones, I. R.**, Keough, K. C., Zhang, M., Fair, T., Abnousi, A., Mishra, S., Ye, Z., Hu, M., Pollen, A. A., Pollard, K. S., & Shen, Y. (2025). Comparative characterization of human accelerated regions in neurons. *Nature*, **640**, 991–999. https://doi.org/10.1038/s41586-025-08622-x

Longhurst, A. D., Wang, K., Suresh, H. G., Ketavarapu, M., Ward, H. N., **Jones, I. R.**, Narayan, V., Hundley, F. V., Hassan, A. Z., Boone, C., Myers, C. L., Shen, Y., Ramani, V., Andrews, B. J., & Toczyski, D. P. (2025). The PRC2.1 subcomplex opposes G1 progression through regulation of CCND1 and CCND2. *eLife*, *13*, RP97577. https://doi.org/10.7554/eLife.97577

Liang, X. G., Hoang, K., Meyerink, B. L., Kc, P., Paraiso, K., Wang, L., **Jones, I. R.**, Zhang, Y., Katzman, S., Finn, T. S., Tsyporin, J., Qu, F., Chen, Z., Visel, A., Kriegstein, A., Shen, Y., Pilaz, L. J., & Chen, B. (2024). A conserved molecular logic for neurogenesis to gliogenesis switch in the cerebral cortex. *Proceedings of the National Academy of Sciences of the United States of America*, *121*(20), e2321711121. https://doi.org/10.1073/pnas.2321711121

Yang, X., Wen, J., Yang, H., **Jones, I. R.**, Zhu, X., Liu, W., Li, B., Clelland, C. D., Luo, W., Wong, M. Y., Ren, X., Cui, X., Song, M., Liu, H., Chen, C., Eng, N., Ravichandran, M., Sun, Y., Lee, D., Van Buren, E., … Shen, Y. (2023). Functional characterization of Alzheimer's disease genetic variants in microglia. *Nature genetics*, *55*(10), 1735–1744. https://doi.org/10.1038/s41588-023-01506-8

Jones, I. R., Ren, X., & Shen, Y. (2022). High-throughput CRISPRi and CRISPRa technologies in 3D genome regulation for neuropsychiatric diseases. *Human molecular genetics*, *31*(R1), R47–R53. https://doi.org/10.1093/hmg/ddac193

Ypsilanti, A. R., Pattabiraman, K., Catta-Preta, R., Golonzhka, O., Lindtner, S., Tang, K., **Jones, I. R.**, Abnousi, A., Juric, I., Hu, M., Shen, Y., Dickel, D. E., Visel, A., Pennachio, L. A., Hawrylycz, M., Thompson, C. L., Zeng, H., Barozzi, I., Nord, A. S., & Rubenstein, J. L. (2021). Transcriptional network orchestrating regional patterning of cortical progenitors. *Proceedings of the National Academy of Sciences of the United States of America*, *118*(51), e2024795118. https://doi.org/10.1073/pnas.2024795118

Ren, X., Wang, M., Li, B., Jamieson, K., Zheng, L., **Jones, I. R.**, Li, B., Takagi, M. A., Lee, J., Maliskova, L., Tam, T. W., Yu, M., Hu, R., Lee, L., Abnousi, A., Li, G., Li, Y., Hu, M., Ren, B., Wang, W., … Shen, Y. (2021). Parallel characterization of cis-regulatory elements for multiple genes using CRISPRpath. *Science advances*, *7*(38), eabi4360. https://doi.org/10.1126/sciadv.abi4360

Song, M., Pebworth, M. P., Yang, X., Abnousi, A., Fan, C., Wen, J., Rosen, J. D., Choudhary, M. N. K., Cui, X., **Jones, I. R.**, Bergenholtz, S., Eze, U. C., Juric, I., Li, B., Maliskova, L., Lee, J., Liu, W., Pollen, A. A., Li, Y., Wang, T., … Shen, Y. (2020). Cell-type-specific 3D epigenomes in the developing human cortex. *Nature*, *587*(7835), 644–649. https://doi.org/10.1038/s41586-020-2825-4

Song, M., Yang, X., Ren, X., Maliskova, L., Li, B., **Jones, I. R**., Wang, C., Jacob, F., Wu, K., Traglia, M., Tam, T. W., Jamieson, K., Lu, S. Y., Ming, G. L., Li, Y., Yao, J., Weiss, L. A., Dixon, J. R., Judge, L. M., Conklin, B. R., … Shen, Y. (2019). Mapping cis-regulatory chromatin contacts in neural cells links neuropsychiatric disorder risk variants to target genes. *Nature genetics*, *51*(8), 1252–1262. https://doi.org/10.1038/s41588-019-0472-1

Zhan, L., Krabbe, G., Du, F., **Jones, I.**, Reichert, M. C., Telpoukhovskaia, M., Kodama, L., Wang, C., Cho, S. H., Sayed, F., Li, Y., Le, D., Zhou, Y., Shen, Y., West, B., & Gan, L. (2019). Proximal recolonization by self-renewing microglia re-establishes microglial homeostasis in the adult mouse brain. *PLoS biology*, *17*(2), e3000134. https://doi.org/10.1371/journal.pbio.3000134