Carter Allen

Contact Information

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Education

Spring 2022 **Doctor of Philosophy** in Biomedical Informatics
The Ohio State University, Columbus OH.
Advisor: Prof. Dongjun Chung
Dissertation: "Bayesian Models for High Throughput Spatial Transcriptomics"

Spring 2017 **Bachelor of Science** in Statistics
University of South Carolina, Columbia SC.
South Carolina Honors College | Magna Cum Laude
Thesis: "A Comparison of Imputation Algorithms for Modeling Water Quality"

Work Experience

2022-Present | Eli Lilly and Company
Research Scientist - Statistician
Provide statistical and bioinformatic support in the context of drug discovery.

Publications

JOI (2022) | Chang Y., He F., Wang J., Chen S., Li J., Liu J., Yu Y., Su L., Ma A. **Allen C.**, Lin Y., Sun S., Liu B., Otero J., Chung D., Fu H., Li Z., Xu D., and Ma Q. (2021). "Migrating Type 2 Dendritic Cells Prime Mucosal Th17 Cells Specific to Small Intestinal Commensal Bacteria." *The Journal of Immunology*.

CSBJ (2022) | Chang Y., He F., Wang J., Chen S., Li J., Liu J., Yu Y., Su L., Ma A. **Allen C.**, Lin Y., Sun S., Liu B., Otero J., Chung D., Fu H., Li Z., Xu D., and Ma Q. (2022). "Define and visualize pathological architectures of human tissues from spatially resolved transcriptomics using deep learning." *Computational and Structural Biotechnology Journal*.

Biometrics (2022) | **Allen C.**, Chang Y., Neelon B., Chang W., Kim H.J., Li Z., Ma Q., and Chung D. (2022). "A Bayesian multivariate mixture model for spatial transcriptomics data." *Biometrics*.

Science Imm. (2022) | Kwon H., Chung D., Kaneko S., Li A., Ma A., Schafer J.M., Zhou L., Riesenberg B.P., Song N.J., Chang Y., Xiao T., **Allen C.**, Sundi D., Oh D.Y., Fong L., Ma Q., Li X., and Li Z. (2022). "Androgen Conspires with the CD8+ T Cell Exhaustion Program and Contributes to Sex Bias in Cancer." *Science Immunology*.

Publications *Continued...*

JITC (2022) | Savardekar H., **Allen C.**, Quiroga D., Chung D., Schwarz E., Lapurga G., Shaffer J., Blaser B., Old M., Wesolowski R., Kendra K., and Carson W. "MDSC gene expression analysis in patients with cancer and the response to inhibition of Bruton's tyrosine kinase." *Journal for ImmunoTherapy of Cancer*.

JHO (2022) | **Allen C.** and Song N.J. and Vilgelm A.E. and Riesenberg B.P., Weller K.P., Reynolds K., Chakravarthy K.B., Kumar A., Khatiwada A., Sun Z., Ma A., Chang Y., Yusuf M., Li A., Zeng C., Evans J.P., Bucci D., Gunasena M., Xu M., Liyanage N.P.M., Bolyard C., Velegraki M., Liu S.L., Ma Q., Devenport M., Liu Y., Zheng P., Malvestutto C.D., Chung D., and Li Z. (2022). "Treatment with soluble CD24 attenuates COVID-19-associated systemic immunopathology." *Journal of Hematology & Oncology*.

Frontiers (2021) | **Allen C.**, Kuhn B.N., Cannella N., Crow A.D., Roberts A.T., Lunerti V., Ubaldi M., Hardiman G., Solberg Woods L. Ciccocioppo R., Kalivas P., and Chung D. (2021). "Network-based discovery of opioid use vulnerability in rats using the Bayesian stochastic block model." *Frontiers in Psychiatry*.

Bioinformatics (2021) | **Allen C.** and Chang Y., Wan C., Chung D., Zhang C., Li Z., Ma Q. (2021). "IRIS-FGM: an integrative single-cell RNA-Seq interpretation system for functional gene module analysis." *Bioinformatics*.

Biometrics (2020) | **Allen C.**, Benjamin-Neelon S.E., Neelon B. (2020). "A Bayesian multivariate mixture model for skewed longitudinal data with intermittent missing observations: An application to infant motor development." *Biometrics*.

Pediatrics (2020) | Benjamin-Neelon S.E., **Allen C.**, Neelon B. (2020). "Household food security and infant adiposity." *Pediatrics*.

BMJ Open (2019) | Gonzalez-Nahm S., Hoyo C., Ostbyte T., Neelon B., **Allen C.**, Benjamin-Neelon S.E. (2019). "Associations of maternal diet with infant adiposity at birth, 6 months and 12 months." *BMJ Open*.

PLOS One (2019) | Couch D., Yu Z., Nam J.H., **Allen C.**, Ramos P.S., da Silveira W.A., Hunt K.J., Hazard E.S., Hardiman G., Lawson A., and Chung D. (2019). "GAIL: An interactive webserver for inference and dynamic visualization of gene-gene associations based on gene ontology guided mining of biomedical literature." *PLOS One*.

Manuscripts Under Peer Review

bioRxiv (2022) | **Allen C.**, Jung K.J., Chang Y., Ma Q., and Chung D. (2022). "Analysis of community connectivity in spatial transcriptomics data." *bioRxiv*.

bioRxiv (2022) | **Allen C.**, Chang Y., Ma Q., and Chung D. (2022). "MAPLE: A Hybrid Framework for Multi-Sample Spatial Transcriptomics Data." *bioRxiv*.

Software Development

`maple`*	Bayesian modeling of multi-sample spatial transcriptomics data. *CRAN*.
`banyan`*	Network-based modeling of spatial transcriptomics data. *GitHub*.
`spruce`*	Bayesian modeling of spatial transcriptomics data. *CRAN*.
`IRISFGM`	Functional gene module analysis of RNA-seq data. *Bioconductor*.
`mlsbm`*	Efficient Bayesian multilevel stochastic blockmodels using C++. *CRAN*.
`GPA`	Genetic analysis incorporating pleiotropy and annotation. *Bioconductor*.
`GGPA`	A graphical model for prioritizing GWAS results. *Bioconductor*.
`dpeak`	Deconvolution of peaks in ChIP-seq analysis. *Bioconductor*.

*Denotes primary author and maintainer.

Awards

Summer 2019	R.L. Anderson Student Poster Award (SRCOS Conference 2019)
Summer 2019	Boyd Harshbarger Student Travel Award (SRCOS Conference 2019)
Spring 2019	Travel Fellowship to May Institute at Northeastern University
Spring 2017	Mu Sigma Rho Award for Undergraduate Statistics Major
Spring 2017	2^{nd} place poster at USC Discover Day
Spring 2017	Magellan Scholar Undergraduate Research Grant
Summer 2015	Bank of America Undergraduate Scholarship
Summer 2014	EPA Undergraduate Scholarship