# ASHLEY S. DOANE, PHD

## Computational Biologist


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## SUMMARY


I am a computational biologist with over a decade of experience in cancer genomics, immuno-oncology, and single-cell multi-omic analysis. I specialize in developing algorithms and reproducible pipelines for somatic variant calling, biomarker discovery, and immunotherapy research, and I have contributed to high-impact studies published in Science, Nature Genetics, and Cell. I excel in cross-functional collaboration and in translating complex genomic insights into actionable advances in precision medicine.


## EXPERIENCE

### Postdoctoral Research Fellow in Computational Immuno-Oncology

**Greenbaum Lab, Memorial Sloan-Kettering Cancer Center**

July 2023 — September 2025 New York, NY

- Developed a computational framework for single cell tumor–immune interactions.
- Contributed to discovery of IL-33–driven tertiary lymphoid structures (Nature, 2025).
- Applied single-cell and spatial omics to study immune regulation in cancer.
- Mentored computational biology graduate students.

### Postdoctoral Research Fellow in Computational Genomics

**New York Genome Center**

January 2022 — July 2023 New York, NY

- Led somatic and structural variant analysis in large cohorts of cancer patients for The Cancer Genome Atlas (TCGA) studies.
- Developed multi-omic computational methods to infer tumor enhancer hijacking structural variants.
- Coauthored studies mapping cancer chromatin landscapes (Science 2024; Nat Genet 2025).

### Graduate Research Associate

**Ari Melnick and Olivier Elemento Labs, Weill Cornell Medicine**

July 2017 — January 2022 New York, NY

- National Cancer Institute Research Fellowship (F31) for studying chromatin architecture in B cell lymphoma subsets.
- Discovered OCT2 mechanisms in B cell fate (Nature Immunology, 2021).
- Developed computational methods to infer transcription factor activity from chromatin accessibility and transcriptome sequencing data.
- Developed and benchmarked best-practice multi-omic NGS pipelines.

## EDUCATION

### Ph.D. in Computational Biology

**Weill Cornell Graduate School of Biomedical Sciences, Cornell University**

July 2014 – December 2020

### B.Sc. in Psychology

**City College of the City University of New York**

Sept 2002 – June 2006

## SKILLS

### Computational Genomics

- Somatic and germline variant calling, WGS/WES
- Integrated analysis of RNA-seq, ATAC-seq, ChIP-seq, Hi-C, and single-cell multi-omics
- Reproducible NGS workflows

### Quantitative Methods

- Machine learning
- Statistical modeling and Bayesian data analysis
- Network analysis
- Information theory

### Domain Expertise

- Tumor evolution and cancer driver discovery
- Immuno-oncology and anti-tumor immunity
- Regulatory genomics of immune cell development
- Transcriptional regulation, epigenomics, and chromatin architecture

### Collaboration

- Cross-functional teamwork with clinicians, biologists, and computational scientists

# AWARDS

### National Cancer Institute Predoctoral Fellowship (F31)

**Weill Cornell Medicine**

November 2017 – November 2020

- Ruth L. Kirschtein National Research Service Award
- Used chromatin accessibility maps to uncover novel regulatory circuits in aggressive B cell lymphomas.

### NIH Postdoctoral Fellowship (T32)

**Weill Cornell Medicine**

July 2023 – September 2025

- Developed BCRi, an information-theoretic framework that integrates single-cell RNA-seq and V(D)J-seq to reveal relationships between B cell receptor repertoires and transcriptional programs.

# REFERENCES


**Olivier Elemento, PhD**
Director, Englander Institute for Precision Medicine
Weill Cornell Medicine
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**Ari Melnick, MD**
Professor of Medicine
Weill Cornell Medicine
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**Benjamin Greenbaum, PhD**
Attending Computational Biologist
Director of Computational Immuno-Oncology
Computational Oncology Service
Memorial Sloan-Kettering Cancer Center
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# SELECTED PUBLICATIONS

A complete list of publications is available in ORCID 0000-0002-1489-1786

## Peer-reviewed Research Articles

- DiNapoli, S. E., Martinez-McFaline, R., Shen, H., **Doane**, **A. S.**, Perez, A. R., Verma, A., Simon, A., Nelson, I., Balgobin, C. A., Bourque, C. T., Yao, J., Raman, R., Béguelin, W., Zippin, J. H., Elemento, O., Melnick, A. M. & Houvras, Y. Histone 3 Methyltransferases Alter Melanoma Initiation and Progression Through Discrete Mechanisms. *Frontiers in Cell and Developmental Biology* **10,** 814216. ISSN: 2296-634X (2022).
- Nilsson-Payant, B. E., Uhl, S., Grimont, A., **Doane**, **A. S.**, Cohen, P., Patel, R. S., Higgins, C. A., Acklin, J. A., Bram, Y., Chandar, V., Blanco-Melo, D., Panis, M., Lim, J. K., Elemento, O., Schwartz, R. E., Rosenberg, B. R., Chandwani, R. & tenOever, B. R. The NF-kB Transcriptional Footprint Is Essential for SARS-CoV-2 Replication. *Journal of Virology* **95,** e01257–21. ISSN: 0022-538X (2021).
- Rivas, M. A., Meydan, C., Chin, C. R., Challman, M. F., Kim, D., Bhinder, B., Kloetgen, A., Viny, A. D., Teater, M. R., McNally, D. R., **Doane**, **A. S.**, Béguelin, W., Fernández, M. T. C., Shen, H., Wang, X., Levine, R. L., Chen, Z., Tsirigos, A., Elemento, O., Mason, C. E. & Melnick, A. M. Smc3 dosage regulates B cell transit through germinal centers and restricts their malignant transformation. *Nature Immunology* **22,** 240–253. ISSN: 1529-2908 (2021).
- Chu, C.-S., Hellmuth, J. C., Singh, R., Ying, H.-Y., Skrabanek, L., Teater, M. R., **Doane**, **A. S.**, Elemento, O., Melnick, A. M. & Roeder, R. G. UniqueImmuneCell Coactivators Specify Locus Control Region Function and Cell Stage. *Molecular Cell* **80,** 845–861.e10. ISSN: 1097-2765 (2020).
- Agirre, X., Meydan, C., Jiang, Y., Garate, L., **Doane**, **A. S.**, Li, Z., Verma, A., Paiva, B., Martín-Subero, J. I., Elemento, O., Mason, C. E., Prosper, F. & Melnick, A. Long non-coding RNAs discriminate the stages and gene regulatory states of human humoral immune response. *Nat Commun* **10,** 821. ISSN: 2041-1723 (2019).
- Dominguez, P. M., Ghamlouch, H., Rosikiewicz, W., Kumar, P., Béguelin, W., Fontan, L., Rivas, M. A., Pawlikowska, P., Armand, M., Mouly, E., Torres-Martin, M., **Doane**, **A. S.**, Fernandez, M. T. C., Durant, M., Della-Valle, V., Teater, M., Cimmino, L., Droin, N., Tadros, S., Motanagh, S., Shih, A. H., Rubin, M. A., Tam, W., Aifantis, I., Levine, R. L., Elemento, O., Inghirami, G., Green, M. R., Figueroa, M. E., Bernard, O. A., Aoufouchi, S., Li, S., Shaknovich, R. & Melnick, A. M. TET2 deficiency causes germinal center hyperplasia, impairs plasma cell differentiation and promotes B-cell lymphomagenesis. *Cancer Discovery*, CD–18-0657. ISSN: 2159-8274 (2018).
- Jiang, Y., Ortega-Molina, A., Geng, H., Ying, H.-Y., Hatzi, K., Parsa, S., McNally, D., Wang, L., **Doane**, **A. S.**, Agirre, X., Teater, M., Meydan, C., Li, Z., Poloway, D., Wang, S., Ennishi, D., Scott, D. W., Stengel, K. R., Kranz, J. E., Holson, E., Sharma, S., Young, J. W., Chu, C.-S., Roeder, R. G., Shaknovich, R., Hiebert, S. W., Gascoyne, R. D., Tam, W., Elemento, O., Wendel, H.-G. & Melnick, A. M. CREBBP. English. *Cancer discovery* **7,** 38–53. ISSN: 2159-8274 (2017).
- Liu, Y., Pelham-Webb, B., Giammartino, D. C. D., Li, J., Kim, D., Kita, K., Saiz, N., Garg, V., **Doane**, **A.**, Giannakakou, P., Hadjantonakis, A.-K., Elemento, O. & Apostolou, E. Widespread Mitotic Bookmarking by Histone Marks and Transcription Factors in Pluripotent Stem Cells. English. *Cell Reports* **19,** 1283 1293. ISSN: 2211-1247 (2017).
- Osborne, J. R., Port, E., Gonen, M., **Doane**, **A.**, Yeung, H., Gerald, W., Cook, J. B. & Larson, S. 18F-FDG PET of Locally Invasive Breast Cancer and Association of Estrogen Receptor Status with Standardized Uptake Value: Microarray and Immunohistochemical Analysis. English. *Journal of Nuclear Medicine* **51,** 543–550. ISSN: 0161-5505 (2010).

- **Doane**, **A. S.**, Chu, C.-S., Giammartino, D. C. D., Rivas, M. A., Hellmuth, J. C., Jiang, Y., Yusufova, N., Alonso, A., Roeder, R. G., Apostolou, E., Melnick, A. M. & Elemento, O. OCT2 pre-positioning facilitates cell fate transition and chromatin architecture changes in humoral immunity. *Nature Immunology* **22,** 1327–1340. ISSN: 1529-2908 (2021).
- Yusufova, N., Kloetgen, A., Teater, M., Osunsade, A., Camarillo, J. M., Chin, C. R., **Doane**, **A. S.**, Venters, B. J., Portillo-Ledesma, S., Conway, J., Phillip, J. M., Elemento, O., Scott, D. W., Béguelin, W., Licht, J. D., Kelleher, N. L., Staudt, L. M., Skoultchi, A. I., Keogh, M.-C., Apostolou, E., Mason, C. E., Imielinski, M., Schlick, T., David, Y., Tsirigos, A., Allis, C. D., Soshnev, A. A., Cesarman, E. & Melnick, A. M. Histone H1 loss drives lymphoma by disrupting 3D chromatin architecture. *Nature* **589,** 299–305. ISSN: 0028-0836 (2021).
- Drozdz, M. M., **Doane**, **A. S.**, Alkallas, R., Desman, G., Bareja, R., Reilly, M., Bang, J., Yusupova, M., You, J., Eraslan, Z., Wang, J. Z., Verma, A., Aguirre, K., Kane, E., Watson, I. R., Elemento, O., Piskounova, E., Merghoub, T. & Zippin, J. H. A nuclear cAMP microdomain suppresses tumor growth by Hippo pathway inactivation. *Cell Reports* **40,** 111412. ISSN: 2211-1247 (2022).
- Yost, K. E., Zhao, Y., Hung, K. L., Zhu, K., Xu, D., Corces, M. R., Shams, S., Louie, B. H., Sarmashghi, S., Sundaram, L., Luebeck, J., Clarke, S., **Doane**, **A. S.**, Granja, J. M., Choudhry, H., Imieliński, M., Cherniack, A. D., Khurana, E., Bafna, V., Felau, I., Zenklusen, J. C., Laird, P. W., Curtis, C., Yost, K. E., Zhao, Y., Hung, K. L., Zhu, K., Xu, D., Corces, M. R., Sarmashghi, S., Sundaram, L., Luebeck, J., **Doane**, **A. S.**, Granja, J. M., Cherniack, A. D., Khurana, E., Bafna, V., Felau, I., Zenklusen, J. C., Laird, P. W., Curtis, C., Greenleaf, W. J., Chang, H. Y., Greenleaf, W. J. & Chang, H. Y. Three-dimensional genome landscape of primary human cancers. *Nature Genetics* **57,** 1189–1200. ISSN: 1061-4036 (2025).
- Amisaki, M., Zebboudj, A., Yano, H., Zhang, S. L., Payne, G., Chandra, A. K., Yu, R., Guasp, P., Sethna, Z. M., Ohmoto, A., Rojas, L. A., Cheng, C., Waters, T., Solovyov, A., Martis, S., **Doane**, **A. S.**, Reiche, C., Bruno, E. M., Milighetti, M., Soares, K., Odgerel, Z., Moral, J. A., Zhao, J. N., Gönen, M., Gardner, R., Tumanov, A. V., Khan, A. G., Vergnolle, O., Nyakatura, E. K., Lorenz, I. C., Baca, M., Patterson, E., Greenbaum, B., Artis, D., Merghoub, T. & Balachandran, V. P. IL-33-activated ILC2s induce tertiary lymphoid structures in pancreatic cancer. *Nature* **638,** 1076–1084. ISSN: 0028-0836 (2025).
- Mlynarczyk, C., Teater, M., Pae, J., Chin, C. R., Wang, L., Arulraj, T., Barisic, D., Papin, A., Hoehn, K. B., Kots, E., Ersching, J., Bandyopadhyay, A., Barin, E., Poh, H. X., Evans, C. M., Chadburn, A., Chen, Z., Shen, H., Isles, H. M., Pelzer, B., Tsialta, I., **Doane**, **A. S.**, Geng, H., Rehman, M. H., Melnick, J., Morgan, W., Nguyen, D. T. T., Elemento, O., Kharas, M. G., Jaffrey, S. R., Scott, D. W., Khelashvili, G., Meyer-Hermann, M., Victora, G. D. & Melnick, A. BTG1 mutation yields supercompetitive B cells primed for malignant transformation. *Science* **379,** eabj7412. ISSN: 0036-8075 (2023).
- Hatzi, K., Geng, H., **Doane**, **A. S.**, Meydan, C., LaRiviere, R., Cardenas, M., Duy, C., Shen, H., Vidal, M. N. C., Baslan, T., Mohammad, H. P., Kruger, R. G., Shaknovich, R., Haberman, A. M., Inghirami, G., Lowe, S. W. & Melnick, A. M. Histone demethylase LSD1 is required for germinal center formation and BCL6-driven lymphomagenesis. *Nat Immunol* **20,** 86–96. ISSN: 1529-2908 (2019).
- Augello, M. A., Liu, D., Deonarine, L. D., Robinson, B. D., Huang, D., Stelloo, S., Blattner, M., **Doane**, **A. S.**, Wong, E. W., Chen, Y., Rubin, M. A., Beltran, H., Elemento, O., Bergman, A. M., Zwart, W., Sboner, A., Dephoure, N. & Barbieri, C. E. CHD1 Loss Alters AR Binding at Lineage-Specific Enhancers and Modulates Distinct Transcriptional Programs to Drive Prostate Tumorigenesis. *Cancer Cell* **35,** 603–617.e8. ISSN: 1535-6108 (2019).
- Gucalp, A., Tolaney, S., Isakoff, S. J., Ingle, J. N., Liu, M. C., Carey, L. A., Blackwell, K., Rugo, H., Nabell, L., Forero, A., Stearns, V., **Doane**, **A. S.**, Danso, M., Moynahan, M. E., Momen, L. F., Gonzalez, J. M., Akhtar, A., Giri, D. D., Patil, S., Feigin, K. N., Hudis, C. A. & Traina, T. A. Phase II trial of bicalutamide in patients with androgen receptor-positive, estrogen receptor-negative metastatic Breast Cancer. English. *Clinical cancer research : an official journal of the American Association for Cancer Research* **19,** 5505 5512. ISSN: 1078-0432 (2013).
- Shike, M., **Doane**, **A. S.**, Russo, L., Cabal, R., Reis-Filho, J. S., Gerald, W., Cody, H., Khanin, R., Bromberg, J. & Norton, L. The effects of soy supplementation on gene expression in breast cancer: a randomized placebo-controlled study. English. *JNCI Journal of the National Cancer Institute* **106.** ISSN: 0027-8874 (2014).
- Azare, J., **Doane**, **A.**, Leslie, K., Chang, Q., Berishaj, M., Nnoli, J., Mark, K., Al-Ahmadie, H., Gerald, W., Hassimi, M., Viale, A., Stracke, M., Lyden, D. & Bromberg, J. Stat3 mediates expression of autotaxin in breast cancer. English. *PloS one* **6,** e27851 (2011).
- **Doane**, **A. S.**, Danso, M., Lal, P., Donaton, M., Zhang, L., Hudis, C. & Gerald, W. L. An estrogen receptor-negative breast cancer subset characterized by a hormonally regulated transcriptional program and response to androgen. English. *Oncogene* **25,** 3994 4008. ISSN: 0950-9232 (2006).

## Review Articles

- **Doane**, **A. S.** & Elemento, O. *Regulatory elements in molecular networks.* English. *Wiley Interdisciplinary Reviews: Systems Biology and Medicine* **9.** ISSN: 1939-005X (2017).
- **Doane**, **A. S.** & Elemento, O. *Alterations in transcriptional networks in cancer: the role of noncoding somatic driver mutations* *Current Opinion in Genetics & Development* **75,** 101919. ISSN: 0959-437X (2022).