Michael Sellers Cuoco

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PhD Student, Bioinformatics and Systems Biology

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Research interests

Retrotransposon activity in the developing, aging, and diseased human brain.

Education

University of California, San Diego — La Jolla, California
PhD in Bioinformatics and Systems Biology — In Progress
Advised by Rusty Gage and Eran Mukamel

Trinity College — Hartford, Connecticut
BS in Molecular and Cellular Biology — May 2016
Minor in Models and Data

Honors and Awards

NSF Graduate Research Fellowship — 2022
National Science Foundation (NSF)

Spot Award — 2017
Broad Institute

Beta Beta Beta National Biology Honors Society — 2014
Trinity College

NESCAC Winter All-Academic Team — 2014
Trinity College

Research experience

PhD Student — 2020 – Present
UC San Diego, Salk Institute — La Jolla, California
Mentors: Rusty Gage and Eran Mukamel

Research Associate — 2016 – 2020
Broad Institute — Cambridge, Massachusetts
Mentors: Aviv Regev, Benjamin Izar, Pratiksha Thakore, Yaara Oren

Undergraduate Researcher — 2014 – 2016
Dana-Farber Cancer Institute — Boston, Massachusetts
Mentors: Matthew Meyerson and Alison Taylor

Undergraduate Researcher — 2013
Trinity College — Hartford, Connecticut
HHMI Science Education Alliance-Phage Hunters Advancing Genomics and Evolutionary Science program. (SEA-PHAGES: seaphages.org)

Research: Published

Eraslan, G., Drokhlyansky, E., Anand, S., Fiskin, E., Subramanian, A., Slyper, M., Wang, J., Wittenberghe, N. V., Rouhana, J. M., Waldman, J., Ashenberg, O., Lek, M., Dionne, D., Win, T. S., **Cuoco, M. S.**, Kuksenko, O., Tsankov, A. M., Branton, P. A., Marshall, J. L., Greka, A., Getz, G., Segrè, A. V., Aguet, F., Rozenblatt-Rosen, O., Ardlie, K. G., Regev, A., "Single-nucleus cross-tissue molecular reference maps toward understanding disease gene function." In: *Science (New York, N.Y.)* 376 (6594 May 14, 2022). DOI: 10.1126/science.abl4290.

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Bi, K., He, M. X., Bakouny, Z., Kanodia, A., Napolitano, S., Wu, J., Grimaldi, G., Braun, D. A., **Cuoco, M. S.**, Mayorga, A., DelloStritto, L., Bouchard, G., Steinharter, J., Tewari, A. K., Vokes, N. I., Shannon, E., Sun, M., Park, J., Chang, S. L., McGregor, B. A., Haq, R., Denize, T., Signoretti, S., Guerriero, J. L., Vigneau, S., Rozenblatt-Rosen, O., Rotem, A., Regev, A., Choueiri, T. K., Allen, E. M. V., "Tumor and immune reprogramming during immunotherapy in advanced renal cell carcinoma." In: *Cancer cell* 39 (5 Mar. 13, 2021). DOI: 10.1016/j.ccell.2021.02.015.

Frangieh, C. J., Melms, J. C., Thakore, P. I., Geiger-Schuller, K. R., Ho, P., Luoma, A. M., Cleary, B., Jerby-Arnon, L., Malu, S., **Cuoco, M. S.**, Zhao, M., Ager, C. R., Rogava, M., Hovey, L., Rotem, A., Bernatchez, C., Wucherpfennig, K. W., Johnson, B. E., Rozenblatt-Rosen, O., Schadendorf, D., Regev, A., Izar, B., "Multimodal pooled Perturb-CITE-seq screens in patient models define mechanisms of cancer immune evasion." In: *Nature genetics* 53 (3 Mar. 2021). DOI: 10.1038/s41588-021-00779-1.

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Muus, C., Luecken, M. D., Eraslan, G., Sikkema, L., Waghray, A., Heimberg, G., Kobayashi, Y., Vaishnav, E. D., Subramanian, A., Smillie, C., Jagadeesh, K. A., Duong, E. T., Fiskin, E., Triglia, E. T., Ansari, M., Cai, P., Lin, B., Buchanan, J., Chen, S., Shu, J., Haber, A. L., Chung, H., Montoro, D. T., Adams, T., Aliee, H., Allon, S. J., Andrusivova, Z., Angelidis, I., Ashenberg, O., Bassler, K., Bécavin, C., Benhar, I., Bergenstråhle, J., Bergenstråhle, L., Bolt, L., Braun, E., Bui, L. T., Callori, S., Chaffin, M., Chichelnitskiy, E., Chiou, J., Conlon, T. M., **Cuoco, M. S.**, Cuomo, A. S. E., Deprez, M., Duclos, G., Fine, D., Fischer, D. S., Ghazanfar, S., Gillich, A., Giotti, B., Gould, J., Guo, M., Gutierrez, A. J., Habermann, A. C., Harvey, T., He, P., Hou, X., Hu, L., Hu, Y., Jaiswal, A., Ji, L., Jiang, P., Kapellos, T. S., Kuo, C. S., Larsson, L., Leney-Greene, M. A., Lim, K., Litviňuková, M., Ludwig, L. S., Lukassen, S., Luo, W., Maatz, H., Madissoon, E., Mamanova, L., Manakongtreecheep, K., Leroy, S., Mayr, C. H., Mbano, I. M., McAdams, A. M., Nabhan, A. N., Nyquist, S. K., Penland, L., Poirion, O. B., Poli, S., Qi, C., Queen, R., Reichart, D., Rosas, I., Schupp, J. C., Shea, C. V., Shi, X., Sinha, R., Sit, R. V., Slowikowski, K., Slyper, M., Smith, N. P., Sountoulidis, A., Strunz, M., Sullivan, T. B., Sun, D., Talavera-López, C., Tan, P., Tantivit, J., Travaglini, K. J., Tucker, N. R., Vernon, K. A., Wadsworth, M. H., Waldman, J., Wang, X., Xu, K., Yan, W., Zhao, W., Ziegler, C. G. K., "Single-cell meta-analysis of SARS-CoV-2 entry genes across tissues and demographics." In: *Nature medicine* 27 (3 Mar. 2021). DOI: 10.1038/s41591-020-01227-z.

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Rozenblatt-Rosen, O., Rotem, A., Regev, A., "A single-cell landscape of high-grade serous ovarian cancer." In: *Nature medicine* 26 (8 June 24, 2020). DOI: 10.1038/s41591-020-0926-0.

Kinker, G. S., Greenwald, A. C., Tal, R., Orlova, Z., **Cuoco, M. S.**, McFarland, J. M., Warren, A., Rodman, C., Roth, J. A., Bender, S. A., Kumar, B., Rocco, J. W., Fernandes, P. A. C. M., Mader, C. C., Keren-Shaul, H., Plotnikov, A., Barr, H., Tsherniak, A., Rozenblatt-Rosen, O., Krizhanovsky, V., Puram, S. V., Regev, A., Tirosh, I., "Pan-cancer single-cell RNA-seq identifies recurring programs of cellular heterogeneity." In: *Nature genetics* 52 (11 Nov. 2020). DOI: 10.1038/s41588-020-00726-6.

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Li, A., Herbst, R. H., Canner, D., Schenkel, J. M., Smith, O. C., Kim, J. Y., Hillman, M., Bhutkar, A., **Cuoco, M. S.**, Rappazzo, C. G., Rogers, P., Dang, C., Jerby-Arnon, L., Rozenblatt-Rosen, O., Cong, L., Birnbaum, M., Regev, A., Jacks, T., "IL-33 Signaling Alters Regulatory T Cell Diversity in Support of Tumor Development." In: *Cell reports* 29 (10 Dec. 2019). DOI: 10.1016/j.celrep.2019.10.120.

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Research: Preprint

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Teaching / Mentorship

Undergraduate mentor — 2021 – Present
UCSD Biology Undergraduate and Master's — La Jolla, California

Bootcamp instructor — Fall 2021, Fall 2022
Bioinformatics and Systems Biology, UCSD — La Jolla, California

Teaching assistant — Spring 2015
Department of Biology, Trinity College — Hartford, Connecticut
BIOL 224: Genetics

Tutor — 2014 – 2016
Department of Biology, Trinity College — Hartford, Connecticut
BIOL 182: Evolution of Life
BIOL 183: Cellular Basis of Life
BIOL 224: Genetics

Service / Outreach

Committee Member — 2021 – Present
Advisory Committee on Diversity — La Jolla, California
Salk Institute for Biological Studies

Director of Onboarding — 2021 – Present
Symposium Organizer — 2022
Graduate Bioinformatics Council — La Jolla, California
UCSD Bioinformatics and Systems Biology

Committee Member — 2020 – Present
Diversity Equity and Inclusion Committee — La Jolla, California
UCSD Bioinformatics and Systems Biology

Seminar Organizer — 2021
Symposium Organizer — Fall 2021
Diversity and Science Lecture Series — La Jolla, California

UCSD

Volunteer - High Tech High Mesa — Fall 2021
Volunteer - La Jolla High School — Fall 2021
SciChats@Salk Education Outreach — La Jolla, California
Salk Institute for Biological Studies

Profficiencies / Skills

Programming Languages
R, Python, Bash

Data Analysis
Single-cell genomics: Seurat, scanpy, pegasus
Pipeline development: Workflow development language (WDL), Snakemake
Job managers: Cromwell, Sun Grid Engine (SGE), Slurm, PBS-Torque
Cloud computing: Google Cloud Platform (GCP), Terra
Visualization: ggplot, matplotlib

Programmatic Reporting
Notebooks / Slides: Quarto, Rmarkdown, Jupyter Notebooks
Websites: Jekyll, Bookdown, Blogdown, Jupyter Book

Software Development
Git, GitHub, GitHub Actions CI/CD