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
Thesis Committee:

- Fred H. Gage, PhD (Chair)
- Eran A. Mukamel, PhD (Co-Chair)
- Graham McVicker, PhD
- Melissa Gymrek, PhD
- Nicholas Schork, PhD

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
Gage Lab, Salk Institute for Biological Studies — La Jolla, California
Mukamel Lab, UC San Diego — La Jolla, California
Mentors: Fred H. Gage and Eran A. Mukamel

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

Undergraduate Researcher 2014 – 2016
Meyerson Lab, 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

Otto, J. E., Ursu, O., Wu, A. P., Winter, E. B., **Cuoco, M. S.**, Ma, S., Qian, K., Michel, B. C., Buenrostro, J. D., Berger, B., Regev, A., Kadoch, C., "Structural and functional properties of mSWI/SNF chromatin remodeling complexes revealed through single-cell perturbation screens." In: *Molecular cell* 83 (8 Apr. 2023). DOI: 10.1016/j.molcel.2023.03.013.

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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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Jerby-Arnon, L., Neftel, C., Shore, M. E., Weisman, H. R., Mathewson, N. D., McBride, M. J., Haas, B., Izar, B., Volorio, A., Boulay, G., Cironi, L., Richman, A. R., Broye, L. C., Gurski, J. M., Luo, C. C., Mylvaganam, R., Nguyen, L., Mei, S., Melms, J. C., Georgescu, C., Cohen, O., Buendia-Buendia, J. E., Segerstolpe, A., Sud, M., **Cuoco, M. S.**, Labes, D., Gritsch, S., Zollinger, D. R., Ortogero, N., Beechem, J. M., Nielsen, G. P., Chebib, I., Nguyen-Ngoc, T., Montemurro, M., Cote, G. M., Choy, E., Letovanec, I., Cherix, S., Wagle, N., Sorger, P. K., Haynes, A. B., Mullen, J. T., Stamenkovic, I., Rivera, M. N., Kadoch, C., Wucherpfennig, K. W., Rozenblatt-Rosen, O., Suvà, M. L., Riggi, N., Regev, A., "Opposing immune and genetic mechanisms shape oncogenic programs in synovial sarcoma." In: *Nature medicine* 27 (2 Jan. 27, 2021). DOI: 10.1038/s41591-020-01212-6.

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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Pelka, K., Hofree, M., Chen, J. H., Sarkizova, S., Pirl, J. D., Jorgji, V., Bejnood, A., Dionne, D., Ge, W. H., Xu, K. H., Chao, S. X., Zollinger, D. R., Lieb, D. J., Reeves, J. W., Fuhrman, C. A., Hoang, M. L., Delorey, T., Nguyen, L. T., Waldman, J., Klapholz, M., Wakiro, I., Cohen, O., Albers, J., Smillie, C. S., **Cuoco, M. S.**, Wu, J., Su, M.-J., Yeung, J., Vijaykumar, B., Magnuson, A. M., Asinovski, N., Moll, T., Goder-Reiser, M. N., Applebaum, A. S., Brais, L. K., DelloStritto, L. K., Denning, S. L., Phillips, S. T., Hill, E. K., Meehan, J. K., Frederick, D. T., Sharova, T., Kanodia, A., Todres, E. Z., Jané-Valbuena, J., Biton, M., Izar, B., Lambden, C. D., Clancy, T. E., Bleday, R., Melnitchouk, N., Irani, J., Kunitake, H., Berger, D. L., Srivastava, A., Hornick, J. L., Ogino, S., Rotem, A., Vigneau, S., Johnson, B. E., Corcoran, R. B., Sharpe, A. H., Kuchroo, V. K., Ng, K., Giannakis, M., Nieman, L. T., Boland, G. M., Aguirre, A. J., Anderson, A. C., Rozenblatt-Rosen, O., Regev, A., Hacohen, N., "Spatially organized multicellular immune hubs in human colorectal cancer." In: *Cell* 184 (18 Aug. 28, 2021). DOI: 10.1016/j.cell.2021.08.003.

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reverses erythroid dysfunction in stress-induced anemias." In: *Nature immunology* 22 (4 Mar. 24, 2021). DOI: 10.1038/s41590-021-00895-4.

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Drokhlyansky, E., Smillie, C. S., Wittenberghe, N. V., Ericsson, M., Griffin, G. K., Eraslan, G., Dionne, D., **Cuoco, M. S.**, Goder-Reiser, M. N., Sharova, T., Kuksenko, O., Aguirre, A. J., Boland, G. M., Graham, D., Rozenblatt-Rosen, O., Xavier, R. J., Regev, A., "The Human and Mouse Enteric Nervous System at Single-Cell Resolution." In: *Cell* 182 (6 Sept. 2020). DOI: 10.1016/j.cell.2020.08.003.

Izar, B., Tirosh, I., Stover, E. H., Wakiro, I., **Cuoco, M. S.**, Alter, I., Rodman, C., Leeson, R., Su, M.-J., Shah, P., Iwanicki, M., Walker, S. R., Kanodia, A., Melms, J. C., Mei, S., Lin, J.-R., Porter, C. B. M., Slyper, M., Waldman, J., Jerby-Arnon, L., Ashenberg, O., Brinker, T. J., Mills, C., Rogava, M., Vigneau, S., Sorger, P. K., Garraway, L. A., Konstantinopoulos, P. A., Liu, J. F., Matulonis, U., Johnson, B. E., 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.

Mao, P., Cohen, O., Kowalski, K. J., Kusiel, J. G., Buendia-Buendia, J. E., **Cuoco, M. S.**, Exman, P., Wander, S. A., Waks, A. G., Nayar, U., Chung, J., Freeman, S., Rozenblatt-Rosen, O., Miller, V. A., Piccioni, F., Root, D. E., Regev, A., Winer, E. P., Lin, N. U., Wagle, N., "Acquired FGFR and FGF Alterations Confer Resistance to Estrogen Receptor (ER) Targeted Therapy in ER+ Metastatic Breast Cancer." In: *Clinical cancer research* 26 (22 July 30, 2020). DOI: 10.1158/1078-0432.CCR-19-3958.

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.

Nayar, U., Cohen, O., Kapstad, C., **Cuoco, M. S.**, Waks, A. G., Wander, S. A., Painter, C., Freeman, S., Persky, N. S., Marini, L., Helvie, K., Oliver, N., Rozenblatt-Rosen, O., Ma, C. X., Regev, A., Winer, E. P., Lin, N. U., Wagle, N., "Acquired HER2 mutations in ER+ metastatic breast cancer confer resistance to estrogen receptor-directed therapies." In: *Nature genetics* 51 (2 Dec. 12, 2018). DOI: 10.1038/s41588-018-0287-5.

Research: Preprint

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Mentorship

Joelle Faybishenko — Fall 2022 – present
Undergraduate Student, UC San Diego
Gage Lab, Salk Institute for Biological Studies — La Jolla, California

Evan Lee — Fall 2022 – present
Undergraduate Student, UC San Diego
Biology Undergraduate and Master's Mentorship, — La Jolla, California

Rohini Gadde — Fall 2021 – present
Undergraduate Student, UC San Diego
Mukamel Lab, UC San Diego — La Jolla, California

Anise Porter — Fall 2020 – present
Undergraduate Student, UC San Diego
Biology Undergraduate and Master's Mentorship, — La Jolla, California

Jesslyn Goh — Fall 2019 – 2020
Undergraduate Student, Wellesley College
Regev Lab, Broad Institute — Cambridge, Massachusetts

Teaching

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

Proficiencies / Skills

Programming Languages
R, Python, Bash