
Michael Sellers Cuoco

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

- Boyle, E. A., Goldberg, G., Schmok, J. C., Burgado, J., Layng, F. I., Grunwald, H. A., Balotin, K. M., **Cuoco, M. S.**, Chang, K.-C., Ecklu-Mensah, G., Arakaki, A. K. S., Ahmed, N., Arceo, X. G., Jagannatha, P., Pekar, J., Iyer, M., Yeo, G. W., “Junior scientists spotlight social bonds in seminars for diversity, equity, and inclusion in STEM.” In: *PloS one* 18 (11 Nov. 2023). DOI: 10.1371/journal.pone.0293322.
- 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.
- Shih, J., Sarmashghi, S., Zhakula-Kostadinova, N., Zhang, S., Georgis, Y., Hoyt, S. H., **Cuoco, M. S.**, Gao, G. F., Spurr, L. F., Berger, A. C., Ha, G., Rendo, V., Shen, H., Meyerson, M., Cherniack, A. D., Taylor, A. M., Beroukhi, R., “Cancer aneuploidies are shaped primarily by effects on tumour fitness.” In: *Nature* 619 (7971 June 29, 2023). DOI: 10.1038/s41586-023-06266-3.
- Eraslan, G., Drokhylyansky, 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.**, Kuksenkov, 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.
- Hwang, W. L., Jagadeesh, K. A., Guo, J. A., Hoffman, H. I., Yadollahpour, P., Reeves, J. W., Mohan, R., Drokhylyansky, E., Wittenberghe, N. V., Ashenberg, O., Farhi, S. L., Schapiro, D., Divakar, P., Miller, E., Zollinger, D. R., Eng, G., Schenkel, J. M., Su, J., Shiau, C., Yu, P., Freed-Pastor, W. A., Abbondanza, D., Mehta, A., Gould, J., Lambden, C., Porter, C. B. M., Tsankov, A., Dionne, D., Waldman, J., **Cuoco, M. S.**, Nguyen, L., Delorey, T., Phillips, D., Barth, J. L., Kem, M., Rodrigues, C., Ciprari, D., Roldan, J., Zelga, P., Jorgji, V., Chen, J. H., Ely, Z., Zhao, D., Fuhrman, K., Fropf, R., Beechem, J. M., Loeffler, J. S., Ryan, D. P., Weekes, C. D., Ferrone, C. R., Qadan, M., Aryee, M. J., Jain, R. K., Neuberg, D. S., Wo, J. Y., Hong, T. S., Xavier, R., Aguirre, A. J., Rozenblatt-Rosen, O., Mino-Kenudson, M., Castillo, C. F.-D., Liss, A. S., Ting, D. T., Jacks, T., Regev, A., “Single-nucleus and spatial transcriptome profiling of pancreatic cancer identifies multicellular dynamics associated with neoadjuvant treatment.” In: *Nature genetics* 54 (8 July 29, 2022). DOI: 10.1038/s41588-022-01134-8.
- Li, J., Pinto-Duarte, A., Zander, M., **Cuoco, M. S.**, Lai, C.-Y., Osteen, J., Fang, L., Luo, C., Lucero, J. D., Gomez-Castanon, R., Nery, J. R., Silva-Garcia, I., Pang, Y., Sejnowski, T. J., Powell, S. B., Ecker, J. R., Mukamel, E. A., Behrens, M. M., “Dnmt3a knockout in excitatory neurons impairs postnatal synapse maturation and increases the repressive histone modification H3K27me3.” In: *eLife* 11 (May 24, 2022). DOI: 10.7554/eLife.66909.
- Bi, K., He, M. X., Bakouny, Z., Kanodia, A., Napolitano, S., Wu, J., Grimaldi, G., Braun, D. A., **Cuoco, M. S.**, Mayorga, A., DeloStritto, 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., Wucherpennig, 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.
- He, M. X., **Cuoco, M. S.**, Crowdis, J., Bosma-Moody, A., Zhang, Z., Bi, K., Kanodia, A., Su, M.-J., Ku, S.-Y., Garcia, M. M., Sweet, A. R., Rodman, C., DelloStritto, L., Silver, R., Steinharter, J., Shah, P., Izar, B., Walk, N. C., Burke, K. P., Bakouny, Z., Tewari, A. K., Liu, D., Camp, S. Y., Vokes, N. I., Salari, K., Park, J., Vigneau, S., Fong, L., Russo, J. W., Yuan, X., Balk, S. P., Beltran, H., Rozenblatt-Rosen, O., Regev, A., Rotem, A., Taplin, M.-E., Allen, E. M. V., “Transcriptional mediators of treatment resistance in lethal prostate cancer.” In: *Nature medicine* 27 (3 Mar. 2021). DOI: 10.1038/s41591-021-01244-6.
- 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., Broyle, 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., Wucherpennig, 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.
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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.
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- 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., Kusieli, 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.
- Jerby-Arnon, L., Shah, P., **Cuoco, M. S.**, Rodman, C., Su, M.-J., Melms, J. C., Leeson, R., Kanodia, A., Mei, S., Lin, J.-R., Wang, S., Rabasha, B., Liu, D., Zhang, G., Margolais, C., Ashenberg, O., Ott, P. A., Buchbinder, E. I., Haq, R., Hodi, F. S., Boland, G. M., Sullivan, R. J., Frederick, D. T., Miao, B., Moll, T., Flaherty, K. T., Herlyn, M., Jenkins, R. W., Thummalaipalli, R., Kowalczyk, M. S., Cañadas, I., Schilling, B., Cartwright, A. N. R., Luoma, A. M., Malu, S., Hwu, P., Bernatchez, C., Forget, M.-A., Barbie, D. A., Shalek, A. K., Tirosh, I., Sorger, P. K., Wucherpfennig, K., Allen, E. M. V., Schadendorf, D., Johnson, B. E., Rotem, A., Rozenblatt-Rosen, O., Garraway, L. A., Yoon, C. H., Izar, B., Regev, A., "A Cancer Cell Program Promotes T Cell Exclusion and Resistance to Checkpoint Blockade." In: *Cell* 175 (4 Nov. 2018). DOI: 10.1016/j.cell.2018.09.006.
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Research: Preprint

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Mentorship	Joelle Faybishenko	Fall 2022 – present
	Undergraduate Student, UC San Diego	
	<i>Gage Lab, Salk Institute for Biological Studies</i>	La Jolla, California
	Evan Lee	Fall 2022 – present

Teaching

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
Current: Masters Student, Harvard University Boston, Massachusetts

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
Diversity and Science Lecture Series
UCSD

Fall 2021
La Jolla, California

Volunteer - High Tech High Mesa
Volunteer - La Jolla High School
SciChats@Salk Education Outreach
Salk Institute for Biological Studies

Fall 2021
Fall 2021
La Jolla, California

Proficiencies / Skills

Programming Languages

R, Python, Bash