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# 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

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## 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., 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.**, 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., Drokhlyansky, 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

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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., 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.
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- Schenkel, J. M., Herbst, R. H., Canner, D., Li, A., Hillman, M., Shanahan, S.-L., Gibbons, G., Smith, O. C., Kim, J. Y., Westcott, P., Hwang, W. L., Freed-Pastor, W. A., Eng, G., **Cuoco, M. S.**, Rogers, P., Park, J. K., Burger, M. L., Rozenblatt-Rosen, O., Cong, L., Pauken, K. E., Regev, A., Jacks, T., “Conventional type I dendritic cells maintain a reservoir of proliferative tumor-antigen specific TCF-1+ CD8+ T cells in tumor-draining lymph nodes.” In: *Immunity* 54 (10 Sept. 18, 2021). DOI: 10.1016/j.immuni.2021.08.026.
- 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.
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## Research: Preprint

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

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**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