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# 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)

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## Research: Published

- 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.**, 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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- 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., 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.
- 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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- 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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## Research: Preprint

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## Teaching / Mentorship

|   |                       |
|---|-----------------------|
| <b>Undergraduate mentor</b>                     | 2021 – Present        |
| <i>UCSD Biology Undergraduate and Master’s</i>  | La Jolla, California  |
| <b>Bootcamp instructor</b>                      | Fall 2021, Fall 2022  |
| <i>Bioinformatics and Systems Biology, UCSD</i> | La Jolla, California  |
| <b>Teaching assistant</b>                       | Spring 2015           |
| <i>Department of Biology, Trinity College</i>   | Hartford, Connecticut |
| BIOL 224: Genetics                              |                       |
| <b>Tutor</b>                                    | 2014 – 2016           |
| <i>Department of Biology, Trinity College</i>   | Hartford, Connecticut |
| BIOL 182: Evolution of Life                     |                       |
| BIOL 183: Cellular Basis of Life                |                       |
| BIOL 224: Genetics                              |                       |

## Service / Outreach

|   |                      |
|---|----------------------|
| <b>Committee Member</b>                         | 2021 – Present       |
| <i>Advisory Committee on Diversity</i>          | La Jolla, California |
| <i>Salk Institute for Biological Studies</i>    |                      |
| <b>Director of Onboarding</b>                   | 2021 – Present       |
| <b>Symposium Organizer</b>                      | 2022                 |
| <i>Graduate Bioinformatics Council</i>          | La Jolla, California |
| <i>UCSD Bioinformatics and Systems Biology</i>  |                      |
| <b>Committee Member</b>                         | 2020 – Present       |
| <i>Diversity Equity and Inclusion Committee</i> | La Jolla, California |
| <i>UCSD Bioinformatics and Systems Biology</i>  |                      |
| <b>Seminar Organizer</b>                        | 2021                 |
| <b>Symposium Organizer</b>                      | Fall 2021            |
| <i>Diversity and Science Lecture Series</i>     | La Jolla, California |

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*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), Snake-make

*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