Michael Sellers Cuoco

Research Associate

Curriculum Vitae
June 2020

Aviv Regev Laboratory - Broad Institute
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Education

May 2016– May 2018 **Postbaccalaureate coursework** — Harvard Extension School
Cambridge, Massachusetts

Sep 2012– May 2016 **BS in Cellular and Molecular Biology** — Trinity College
Hartford, Connecticut
- Minor: Models and Data
- Major GPA: 3.62

Honors and Awards

2017 **Spot Award** — Broad Institute
Cambridge, Massachusetts
- Awarded to nominees to acknowledge and demonstrate appreciation and recognition for their exceptional contributions.

2014 **TriBeta National Biology Honors Society** — Trinity College
Hartford, Connecticut
- Dedicated to improving the understanding and appreciation of biological study and extending boundaries of human knowledge through scientific research. Members must meet the national membership criteria.

2014 **NESCAC Winter All-Academic Team** — Trinity College
Hartford, Connecticut
- Student-athletes must have reached sophomore academic standing, and be in good standing in their sport with a cumulative grade point average of at least 3.50.

Experience

Aug 2016– Aug 2020 **Research Associate** — Aviv Regev Lab, Broad Institute, MIT & Harvard
Cambridge, Massachuseets
- Collaborated with teams of physicians and scientists to characterize signatures of cancer drug resistance by single-cell and bulk transcriptome and chromatin profiling of patient, mouse, and cell line samples. Conducted functional validation primarily by in vitro by genetic perturbation experiments.

May 2015– Aug 2015 **Undergraduate Student** — Matthew Meyerson Lab, Dana-Farber Cancer Institute, Harvard Medical School
Boston, Massachusetts
- Undergraduate thesis: Engineered an in vitro model of chromosome arm 8p loss by CRISPR/Cas9 editing and artificial telomere recombination to investigate the functional consequences of the common cancerous alteration.

May 2014– Aug 2014 **Undergraduate Student** — Matthew Meyerson Lab, Dana-Farber Cancer Institute, Harvard Medical School
Boston, Massachusetts

Sep 2012– Dec 2013 **Undergraduate Student** — SEA-PHAGES, Genomics Research Program, Trinity College
Hartford, Connecticut

Jun 2011– Jul 2011 **Highschool Student** — Alan D'Andrea Lab, Dana-Farber Cancer Institute, Harvard Medical School
Boston, Massachusetts

Professional Training

2018 **Harvard Biotech Incubator** Harvard Biotech Club
Boston, Massachusetts
➤ Worked directly with company founding members and key opinion leaders, performing due diligence and market research to identify clinical indications for therapeutic technology.

2018 **Patent Law Short Course** Harvard Biotech Club
Boston, Massachusetts
➤ Reviewed basic concepts of patent law through weekly case readings and workshops at a local firm.

2017 **Heatlhcare Innovation & Commercialization Short Course** Harvard Biotech Club
Boston, Massachusetts
➤ Weekly modules addressed various aspects of the commercialization process of biomedical technology including intellectual property, market sizing, clinical paths, and FDA regulation.

Teaching

2015-2016 **Tutor** Trinity College
Hartford, Connecticut
➤ Tutored struggling students one-on-one by request

2015-2016 **Teaching Assistant** Trinity College
Hartford, Connecticut
➤ Hosted study sessions on topics in genetics

2018 **CodeRATS** Broad Institute
Cambridge, Massachusetts
➤ Managed the leadership team for a series of institute-wide introduction to programming workshops.

Publications

Journal Articles

Dec 3, 2019 **IL-33 Signaling Alters Regulatory T Cell Diversity in Support of Tumor Development.** A, Li; RH, Herbst; D, Canner; JM, Schenkel; OC, Smith; JY, Kim; M, Hillman; A, Bhutkar; MS, Cuoco; CG, Rappazzo; P, Rogers; C, Dang; L, Jerby-Arnon; O, Rozenblatt-Rosen; L, Cong; M, Birnbaum; A, Regev; T, Jacks
Cell reports – doi.org/10.1016/j.celrep.2019.10.120

Nov 1, 2018 **A Cancer Cell Program Promotes T Cell Exclusion and Resistance to Checkpoint Blockade.** L, Jerby-Arnon; P, Shah; MS, Cuoco; C, Rodman; MJ, Su; JC, Melms; R, Leeson; A, Kanodia; S, Mei; JR, Lin; S, Wang; B, Rabasha; D, Liu; G, Zhang; C, Margolais; O, Ashenberg; PA, Ott; EI, Buchbinder; R, Haq; FS, Hodi; GM, Boland; RJ, Sullivan; DT, Frederick; B, Miao; T, Moll; KT, Flaherty; M, Herlyn; RW, Jenkins; R, Thummalapalli; MS, Kowalczyk; I, Cañadas; B, Schilling; ANR, Cartwright; AM, Luoma; S, Malu; P, Hwu; C, Bernatchez; MA, Forget; DA, Barbie; AK, Shalek; I, Tirosh; PK, Sorger; K, Wucherpfennig; EM, Van Allen; D, Schadendorf; BE, Johnson; A, Rotem; O, Rozenblatt-Rosen; LA, Garraway; CH, Yoon; B, Izar; A, Regev
Cell – doi.org/10.1016/j.cell.2018.09.006

Sep 21, 2017 **The neuropeptide NMU amplifies ILC2-driven allergic lung inflammation.** A, Wallrapp; SJ, Riesenfeld; PR, Burkett; RE, Abdulnour; J, Nyman; D, Dionne; M, Hofree; MS, Cuoco; C, Rodman; D, Farouq; BJ, Haas; TL, Tickle; JJ, Trombetta; P, Baral; CSN, Klose; T, Mahlakõiv; D, Artis; O, Rozenblatt-Rosen; IM, Chiu; BD, Levy; MS, Kowalczyk; A, Regev; VK, Kuchroo
Nature – doi.org/10.1038/nature24029

Preprints

Jun 5, 2020 **Cycling cancer persister cells arise from lineages with distinct transcriptional and metabolic programs**
Oren, Y; Tsabar, M; Cabanos, HF; Cuoco, MS; Zaganjor, E; Thakore, PI; Tabaka, M; Fulco, CP; Hurvitz, SA; Slamon, DJ; Lahav, G; Hata, A; Brugge, JS; Regev, A
BioRxiv – doi.org/10.1101/2020.06.05.136358

Apr 20, 2020 **Integrated analyses of single-cell atlases reveal age, gender, and smoking status associations with cell type-specific expression of mediators of SARS-CoV-2 viral entry and highlights inflammatory programs in putative target cells** Muus, C; Luecken, MD; Eraslan, G; Waghray, A; Heimberg, G; Sikkema, L; Kobayashi, Y; Vaishnav, ED; Subramanian, A; Smillie, C; Jagadeesh, K; Duong, ET; Fiskin, E; Torlai Triglia, E; Ansari, M; Cai, P; Lin, B; Buchanan, J; Chen, S; Shu, J; Haber, AL; Chung, H; Montoro, DT; Adams, T; Aliee, H; Allon, SJ; Andrusivova, Z; Angelidis, I; Ashenberg, O; Bassler, K; Becavin, C; Benhar, I; Bergenstrahle, J; Bergenstrahle, L; Bolt, L; Braun, E; Bui, LT; Chaffin, M; Chichelnitskiy, E; Chiou, J; Conlon, TM; Cuoco, MS; Deprez, M; Fischer, DS; G
BioRxiv – doi.org/10.1101/2020.04.19.049254

Mar 20, 2020 **Transcriptional mediators of treatment resistance in lethal prostate cancer** He, MX; Cuoco, MS; Crowdis, J; Bosma-Moody, A; Zhang, Z; Bi, K; Kanodia, A; Su, M-J; Rodman, C; DelloStritto, L; Shah, P; Burke, KP; Izar, B; Bakouny, Z; Tewari, AK; Liu, D; Camp, SY; Vokes, NI; Park, J; Vigneau, S; Fong, L; Rozenblatt-Rosen, O; Regev, A; Rotem, A; Taplin, M-E; Van Allen, EM
BioRxiv – doi.org/10.1101/2020.03.19.998450

Oct 21, 2019 **Pan-cancer single cell RNA-seq uncovers recurring programs of cellular heterogeneity** Kinker, GS; Greenwald, AC; Tal, R; Orlova, Z; Cuoco, MS; McFarland, JM; Warren, A; Rodman, C; Roth, JA; Bender, SA; Kumar, B; Rocco, JW; Fernandes, PA; Mader, CC; Keren-Shaul, H; Plotnikov, A; Barr, H; Tsherniak, A; Rozenblatt-Rosen, O; Krizhanovsky, V; Puram, SV; Regev, A; Tirosh, I
BioRxiv – doi.org/10.1101/807552

Aug 28, 2019 **The enteric nervous system of the human and mouse colon at a single-cell resolution** Drokhlyansky, E; Smillie, CS; Van Wittenberghe, N; Ericsson, M; Griffin, GK; Dionne, D; Cuoco, MS; Goder-Reiser, MN; Sharova, T; Aguirre, AJ; Boland, GM; Graham, D; Rozenblatt-Rosen, O; Xavier, RJ; Regev, A
BioRxiv – doi.org/10.1101/746743

Aug 4, 2019 **Opposing immune and genetic forces shape oncogenic programs in synovial sarcoma** Jerby, L; Neftel, C; Shore, ME; McBride, MJ; Haas, B; Izar, B; Weissman, HR; Volorio, A; Boulay, G; Cironi, L; Richman, AR; Broye, LC; Gurski, JM; Luo, CC; Mylvaganam, R; Nguyen, L; Mei, S; Melms, Jc; Georgescu, C; Cohen, O; Buendia-Buendia, JE; Cuoco, MS; Labes, D; Zollinger, DR; Beechem, JM; Nielsen, P; Chebib, I; Cote, G; Choy, E; Letovanec, I; Cherix, S; Wagle, N; Sorger, PK; Haynes, AB; Mullen, JT; Stamenkovic, I; Rivera, MN; Kadoch, C; Rozenblatt-Rosen, O; Suva, ML; Riggi, N; Regev, A
BioRxiv – doi.org/10.1101/724302

Apr 12, 2019 **Acquired FGFR and FGF alterations confer resistance to estrogen receptor (ER) targeted therapy in ER+ metastatic breast cancer** Mao, P; Cohen, O; Kowalski, KJ; Kusiel, JG; Buendia-Buendia, JE; Exman, P; Wander, SA; Waks, AG; Chung, J; Miller, VA; Federica Piccioni, F; Root, DE; Winer, EP; Lin, NU; Wagle, N
BioRxiv – doi.org/10.1101/605436

Publications are updated programmatically each week.

Presentations

Talks

Apr 2020 **The cellular origins of drug resistance in cancer**
Regev Lab Staff Meeting; Cambridge, Massachusetts

Oct 2018 **CRISPR screening for regulators of cancer immune checkpoint inhibitor resistance**
Regev Lab Science Days Retreat; Cambridge, Massachusetts

May 2017 **Understanding the mechanisms of drug resistance in melanoma**
Regev Lab Staff Meeting; Cambridge, Massachusetts

May 2016 **In vitro modeling and analysis of chromosome 8p arm-level deletion using CRISPR-Cas9.**
Trinity College Biology Department; Hartford, Connecticut

Aug 2015 **In vitro modeling and analysis of chromosome 8p arm-level deletion using CRISPR-Cas9.**
Meyerson Lab Group Meeting; Boston, Massachusetts

Aug 2014 **Genome engineering to generate models of chromosome arm-level aneuploidies.**
Meyerson Lab Group Meeting; Boston, Massachusetts

Nov 2012 **The role of the FANCD2 gene in Fanconi Anemia and DNA repair.**
Concord-Carlisle High School STEM series; Concord, Massachusetts

Posters

Dec 2019 **Metabolic switching underlies the ability of cancer persister cells to cycle under drug treatment.**
Annual Broad Institute Retreat; Boston, Massachusetts

Feb 2019 **Targeting the root of non-genetic cancer relapse using an expressed barcode library.**
Annual Klarman Cell Observatory Retreat; Cambridge, Massachusetts

Dec 2018 **Discovering the master regulators of immune checkpoint inhibitor resistance in melanoma with Perturb-Seq.**
Annual Broad Institute Retreat; Boston, Massachusetts

Jul 2018 **Single-cell RNA-Seq of melanoma ecosystems reveals sources of T cell exclusion linked to immunotherapy clinical outcomes.**
Annual Broad Institute-Israel Science Foundation Symposium; Cambridge, Massachusetts

Jun 2018 **The Center for Cancer Precision Medicine enables exploration of immunotherapy resistance in melanoma at the single-cell level.**
Annual Dana-Farber / Harvard Cancer Center Genetics Retreat; Boston, Massachusetts

May 2016 **In vitro modeling and analysis of chromosome 8p arm-level deletion using CRISPR-Cas9.**
Trinity College Annual Spring Research Symposium; Hartford, Connecticut

May 2013 **Review of integrase-mediated site-specific recombination in mycobacteriophage species.**
Trinity College Annual Spring Research Symposium; Hartford, Connecticut

Service

2018 **Patient Ambassador** Dana-Farber Cancer Institute
Boston, Massachusetts

- ➤ Escorted patients to appointments across the Longwood Medical Area

Skills

statistical modelling, data science, reproducible research	Analytical
R (advanced), Bash, Matlab, Python	Programming
tidyverse, Rmarkdown, blogdown	Packages
Git, Docker, Travis	Tools