

Tal Danino, Ph.D.

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Education

- Ph.D., Bioengineering, University of California, San Diego (2011)
- B.S., Physics, University of California, Los Angeles (2005)
- B.S., Mathematics, University of California, Los Angeles (2005)
- B.S., Chemistry, University of California, Los Angeles (2005)

Professional Appointments

- Associate Professor (tenured), Department of Biomedical Engineering, Columbia University, 2023 - present
- Associate Professor (tenure-track), Department of Biomedical Engineering, Columbia University, 2020 - 2023
- Assistant Professor, Department of Biomedical Engineering, Columbia University, 2016 - 2020
- Member, Herbert Irving Comprehensive Cancer Center, Columbia University, 2016 - present
- Member, Data Science Institute, Columbia University, 2016 - present
- Postdoctoral Fellow, Koch Institute for Integrative Cancer Research, MIT, Dr. Sangeeta N. Bhatia, 2011-2015
- Ph.D. student, Department of Bioengineering, University of California, San Diego, Dr. Jeff Hasty, 2005-2011

Selected Honors and Awards

- 2025 AIMBE Fellow
- 2025 CZI Biohub Investigator
- 2024 Research Rebel, Charlie Teo Foundation
- 2020 Cancer Research Institute (CRI) Lloyd J. Old Scientist's Taking Risks (STAR) Award
- 2020 Pershing Square Sohn Prize for Young Investigators in Cancer Research
- 2019 NSF CAREER Award
- 2018 ALCF Young Innovators Team Awards (YITA)
- 2017 Breast Cancer Research Foundation-AACR Career Development Award
- 2017 Department of Defense Era of Hope Breast Cancer Scholar Award
- 2015 NIH Pathway to Independence Award (K99/R00)
- 2015 TED Fellow
- 2014 New England Biolabs Passion in Science Award
- 2012 NIH Ruth L. Kirschstein National Research Service Award (NRSA)
- 2011 Misrock Postdoctoral Fellowship
- 2006 Department of Energy Computational Science Graduate Fellowship (DoE CSGF)

Selected Recent Publications

* indicates corresponding and senior author(s). ‡ equal author contribution.

- Singer, Z.‡, Pabon, J.‡, Huang, H., Rice, C., **Danino, T.*** [Engineered bacteria launch and control an oncolytic virus.](#) *Nature Biomedical Engineering* (2025) doi.org/10.1038/s41551-025-01476-8
- Ballister, E.R.‡, Michels, A.‡, Vincent, R.L.‡, Kreindler, L., Chowdhury, S., Upadhaya, S., Saez-Ibañez, A.R., Tu, T., Gottweis, J., **Danino, T.*** [The emerging landscape of engineered bacteria cancer therapies.](#) *Nature Biotechnology* (2025)
Redenti, A.‡, Im, J.‡, Redenti, B., Li, F., Rouanne, M., Sheng, Z., Sun, W., Gurbatri, C. R., Huang, S., Jang, Y., Hahn, J., Komaranchath, M., Ballister, E., Vincent, R. L., Vardoshivilli, A., **Danino, T.***, Arpaia, N.* [Probiotic neoantigen delivery vectors for precision cancer immunotherapy.](#) *Nature* (2024)
- Gurbatri, C.‡, Radford, G.A.‡, Vrbanc, L., Im, J., Thomas, E.M., Coker, C., Taylor, S.R., YoungUk, J., Sivan, A., Rhee, K., Saleh, A.A., Chien, T., Zandkarimi, F., Lia, I., Lannagan, T.R.M., Wang, T., Wright, J.A., Thomas, E., Kobayashi, H., Ng, J.Q., Lawrence, M., Sammour, T., Thomas, M., Lewis, M., Papanicolas, L., Perry, J., Fitzsimmons, T., Kaazan, P., Lim, A., Stravopoulos, A.M., Gouskos, D.A., Marker, J., Ostroff, C., Rogers, G., Arpaia, N., Worthley, D.L., Woods, S.L.* **Danino, T.*** [Engineering tumor-colonizing E. coli Nissle 1917 for detection and treatment of colorectal neoplasia.](#) *Nature Communications* 15, 646 (2024)
- Hahn, J., Ding, S., Im, J., Harimoto, T., Leong, K.W., **Danino, T.*** [Bacterial therapies at the interface of synthetic biology and nanomedicine.](#) *Nature Reviews Bioengineering* 2, 120–135 (2024)
- Vincent, R.‡, Gurbatri, C.‡, Redenti, A., Coker, C., Arpaia, N., **Danino, T.*** [Probiotic-guided CAR-T cells for solid tumor targeting.](#) *Science* 382, 211-218 (2023)
- Doshi, A., Shaw, M., Tanea, R., Moon, S., Doshi, A., Laine, A., Guo, J., **Danino, T.*** [Engineered bacterial swarm patterns as spatial records of environmental inputs.](#) *Nature Chemical Biology* 19, 878–886 (2023)

- Deb, D., Wu, Y., Coker, C., Harimoto, T., Huang, R., **Danino, T.*** [Design of combination therapy for engineered bacterial therapeutics in non-small cell lung cancer](#). *Scientific Reports* 12:21551 (2022)
- Gurbatri, C., Arpaia, N., **Danino, T.*** [Engineering bacteria as interactive cancer therapies](#). *Science* 378(6622), 858-864 (2022)
- Harimoto, T.‡, Hahn, J.‡, Chen, Y., Im, J., Zhang, J., Hou, N., Coker, C., Gray, K., Harr, N., Chowdhury, S., Pu, K., Nimura, C., Arpaia, N., Leong, K.*, **Danino, T.*** [A programmable encapsulation system improves delivery of therapeutic bacteria in mice](#). *Nature Biotechnology* 40,1259–1269 (2022)
- Harimoto, T., Deb, D., **Danino, T.*** [A rapid screening platform to coculture bacteria within tumor spheroids](#). *Nature Protocols* (2022)
- Chien, T.‡, Harimoto, T.‡, Kepecs, B., Gray, K., Coker, C., Pu, K., Azad, T., Nolasco, A., Pavlicova, M., **Danino, T.*** [Enhancing the tropism of bacteria via genetically programmed biosensors](#). *Nature Biomedical Engineering* 6, 94-104 (2021)
- Gurbatri, C., Lia, I., Vincent, R., Coker, C., Castro, S., Treuting, P.M., Hinchliffe, T.H., Arpaia, N., **Danino, T.*** [Engineered probiotics for local tumor delivery of checkpoint blockade nanobodies](#). *Science Translational Medicine* 12(530), eaax0876 (2020)
- Harimoto, T., Singer, Z., Velazquez, O., Zhang, J., Castro, S., Hinchliffe, T., Mather, W., **Danino, T.*** [Rapid screening of engineered microbial therapies in a 3-D multicellular model](#). *PNAS* 116(18),9002-9007 (2019)
- Chowdhury, S., Castro, S., Coker, C., Hinchliffe, T.E., Arpaia, N.*, **Danino, T.*** [Programmable bacteria induce durable tumor regression and systemic antitumor immunity](#). *Nature Medicine* 25(7),1057–1063 (2019)
- Din, M.‡, **Danino, T.‡**, Prindle, A., Allen, K., Skalak, M., Bhatia, S., Hasty, J. [Synchronized cycles of bacterial lysis for in vivo delivery](#). *Nature* 536(7614), 81-85 (2016)
- **Danino, T.‡**, Prindle, A.‡, Kwong, G., Skalak, M., Li, H., Allen, K., Hasty, J., and Bhatia, S. [Programmable probiotics for cancer detection in urine](#). *Science Translational Medicine* 7, 289ra84 (2015)
- **Danino, T.‡**, Mondragon-Palomino, O.‡, Tsimring, L., and Hasty, J. [A synchronized quorum of genetic clocks](#). *Nature* 463, 326-330 (2010)

Selected Current Research Support

- **UG3CA301294** (MPI: Arpaia, Danino) *Engineered probiotic bacteria for colorectal cancer immunoprevention and interception*. NIH UG3 [04/01/2025 - 03/31/2030]- \$801,225 (allocation to Danino in direct costs)
- **R01CA304090** (MPI: Arpaia, Danino) *Modulating the localization and persistence of microbial neoantigen vaccine vectors to enhance therapeutic efficacy*. NIH/NCI [07/01/2025 - 06/30/2030]- \$848,000
- **R01EB034302** (PI: Danino, Arpaia, Leong) *Programmable encapsulation systems to improve delivery of therapeutic bacteria*. NIH/ NIBIB [6/01/2023-5/30/2027] – \$1,500,000
- **INV-060390** (PI: Danino) *Engineering bacteria as in vivo bioreactors*. Bill and Melinda Gates Foundation [01/11/2023–06/30/2026] – \$900,000
- **CRI3446** (PI: Danino) *Engineering probiotics as cancer immunotherapies*. Cancer Research Institute [08/01/2020–07/30/2026] – \$1,250,000
- **Charlie Teo Foundation 2024 Research Rebel Award** (PI: Danino) *Bioengineering probiotics for glioblastoma therapy*. [02/2025-01/2027]- \$122,000
- **CZBNY CU25-0232** (PI: Danino) *Engineering synthetic prokaryotic-immune cell communication systems*. CZ Biohub Investigator award [04/01/2025-03/31/2028]- \$652,173

Selected Completed Research Support

- **R01EB029750** (PI: Danino) *Engineering S. typhimurium for metastatic colorectal cancer*. NIH/NIBIB [06/15/2020-11/30/2025] – \$900,000
- **ARPA-H** (PI: Kwong, Qiu, Blazeck, Danino, Xue) *Mapping the cancer and organ degradome atlas (CODA) to unlock synthetic biomarkers for multi cancer early detection*. [10/01/2023–12/30/2026] – \$4,520,108

Selected Other Publications/News

- **Danino, T.** [Beautiful Bacteria](#). Rizzoli [book review] (2024)
- Deb, D., Shoreibah, S., **Danino, T.** [Reimagining cancer research with art](#). *Nature Reviews Cancer* (2022)
- Ruskin, E., **Danino, T.** [Syndemic: Using game-based learning to engage students in the human microbiome](#). Connecting Sustainability Research and Teaching: Discourses on Justice, Inclusion, and Authenticity (2022)
- Science | [Perspective on Engineered bacteria guide T cells to tumors](#)
- NIH/NIBIB Science Highlights | [Can bioengineered bacteria make cancer treatments better?](#)
- The New York Times | [New Weapons Against Cancer: Millions of Bacteria Programmed to Kill](#)
- BBC Science Focus | [Seek and destroy: beneficial bacteria programmed to fight cancer](#)
- Nature Medicine, News & Views | [Programmable bacteria as cancer therapy](#)