



Kyle Gabriel Daniels

Assistant Professor of Genetics and, by courtesy, of Neurosurgery (Adult Neurosurgery)

 NIH Biosketch available Online

Bio

BIO

Kyle obtained his BS in Biochemistry from the University of Maryland College Park in 2010, conducting undergraduate research with Dr. Dorothy Beckett, PhD. He obtained his PhD in Biochemistry with a certificate in Structural Biology and Biophysics. His dissertation is titled "Kinetics of Coupled Binding and Conformational Change in Proteins and RNA" and was completed in the laboratory of Dr. Terrence G. Oas, PhD. Kyle performed postdoctoral training with Dr. Wendell A. Lim, PhD at UCSF studying how CAR T cell phenotype is encoded by modular signaling motifs within chimeric antigen receptors.

Kyle's lab is interested in harnessing the principles of modularity to engineer receptors and gene circuits to control cell functions.

The lab will use synthetic biology, medium- and high-throughput screens, and machine learning to: (1) Engineer immune cells to achieve robust and durable responses against various cancer targets, (2) Coordinate behavior of multiple engineered cell types in cancer, autoimmune disease, and payload delivery, (3) Control survival, proliferation, and differentiation of hematopoietic stem cells (HSCs) and immune cells, and (4) Explore principles of modularity related to engineering receptors and gene circuits in mammalian cells.

ACADEMIC APPOINTMENTS

- Assistant Professor, Genetics
- Assistant Professor (By courtesy), Neurosurgery
- Member, Bio-X
- Member, Maternal & Child Health Research Institute (MCHRI)
- Member, Stanford Cancer Institute

HONORS AND AWARDS

- NIH Director's New Innovator Award (DP2), NIH Common Fund (2025-2030)
- Trailblazer R21 Award, NIBIB (2025 - 2028)
- Damon Runyon Postdoctoral Fellowship, Damon Runyon Cancer Research Foundation (2016 - 2020)
- Postdoctoral Enrichment Program Fellowship, Burroughs Wellcome Fund (2016 - 2019)
- Graduate Research Fellowship, National Science Foundation (2011 - 2015)
- Merck Index Award, University of Maryland Dept. of Chemistry and Biochemistry (2010)

Teaching

COURSES

2025-26

- Advanced Genetics: GENE 205 (Win)
- Frontiers in Biological Research: BIOC 215, DBIO 215, GENE 215 (Spr)
- Synthetic proteins and genetic circuits: BIO 246, BIOE 266, GENE 246 (Aut)

2024-25

- Advanced Genetics: GENE 205 (Win)
- Genetics and Developmental Biology Training Camp: DBIO 200, GENE 200 (Aut)
- Synthetic proteins and genetic circuits: BIO 246, BIOE 266, GENE 246 (Aut)

2023-24

- Advanced Genetics: GENE 205 (Win)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Maggie Arriaga, Zaria Contejean, Ezekiel Delgado, Simone Evans, Cesar Garcia, Mia Greeson, Laura Guerrero, Emma Heaton, Rahul Nagvekar, Julian Perez, Sarah Sackey

Postdoctoral Faculty Sponsor

Wan Sang Cho

Doctoral Dissertation Advisor (AC)

Kelcey Allen, Ethan Chen, Vicky Chen, Jodie Lunger, Antonio Salcido-Alcantar JR, Lucas Sant'Anna, Jorge Urbina

Doctoral Dissertation Co-Advisor (AC)

Kamal Obbad

Publications

PUBLICATIONS

- **Programmable JAK/STAT signaling drives CAR T cells to enhanced functional states**
Cho, W., Liu, J. Y., Beckett, A. N., Craig, E., Brademan, D. R., Lunger, J. C., Xu, P., Ho, K., Chen, E. E., Salcido-Alcantar, A., Sant'anna, L. E., Obbad, K., Po, et al
AMER ASSOC CANCER RESEARCH.2026
- **Programmable synthetic cytokine receptors polarize macrophages to user-defined functional states** *bioRxiv*
Lunger, J. C., Sant'Anna, L. E., Salcido-Alcantar, A., Arroyo Hornero, R., Cho, W., Vaughan-Jackson, A., Gu, M., Liu, J. Y., Beckett, A. N., Parrilla-Garcia, J., Ramakrishna, S., Bassik, M. C., Daniels, et al
2026
- **Integrating synthetic biology to understand and engineer the heart, lung, blood, and sleep systems.** *Cell systems*
Chaikof, E. L., Chen, J., Gillette, M. U., Boyer, L. A., Deans, T. L., Li, P., Hilton, I. B., Daniels, K., Goyal, Y., Mei, Y., Linghu, C., Loveless, T. B., Truong, et al
2025; 16 (12): 101446
- **Constructing the cure: engineering the next wave of antibody and cellular immune therapies** *JOURNAL FOR IMMUNOTHERAPY OF CANCER*
Bailey, S. R., Bartee, E., Daniels, K. G., Heery, C. R., Kaumaya, P., Lesinski, G. B., Lowinger, T. B., Nelson, M. H., Rubinstein, M. P., Wittling, M. C., Paulos, C. M., Posey Jr, A. D.

2025; 13 (8)

- **A continuous landscape of signaling encodes a corresponding landscape of CAR T cell phenotype** *bioRxiv*
Cho, W., Liu, J. Y., Beckett, A. N., Lunger, J. C., Xu, P., Ho, K., Chen, E. E., Salcido-Alcántar, A., Sant'Anna, L. E., Obbad, K., Po, N., Sotillo, E., Mackall, et al
2025
- **Harnessing the power of artificial intelligence to advance cell therapy.** *Immunological reviews*
Capponi, S., Daniels, K. G.
2023
- **Decoding CAR T cell phenotype using combinatorial signaling motif libraries and machine learning.** *Science (New York, N.Y.)*
Daniels, K. G., Wang, S., Simic, M. S., Bhargava, H. K., Capponi, S., Tonai, Y., Yu, W., Bianco, S., Lim, W. A.
2022; 378 (6625): 1194-1200