Grayson E. Rodriguez

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EDUCATION

Stanford University **Stanford, CA**
Ph.D. in Immunology January 2025
Dissertation Title: "Modulating JAK/STAT Activation Through Induced Proximity"
GPA 4.0/4.0

Massachusetts Institute of Technology **Cambridge, MA**
B.S. in Chemistry and Biology June 2019
GPA 4.9/5.0

RESEARCH EXPERIENCE

Stanford Departments of Biology and Molecular & Cellular Physiology **Stanford, CA**
Postdoctoral Scholar in Red-Horse Lab and Garcia Lab April 2026 – present

- Developing applications and methods of protein engineering to target developmental pathways for regenerative medicine

Stanford Department of Molecular and Cellular Physiology **Stanford, CA**
Postdoctoral Scholar in the Garcia Lab January 2025 – April 2026
PhD Student in the Garcia Lab April 2022 – January 2025

- Developed synthetic cytokines to induce novel signaling pathways
- Developing and optimizing CAR-T cells via novel, orthogonal chimeric signaling receptors
- Investigated signaling mechanisms of cytokine receptor families via structural insights

Stanford Department of Bioengineering **Stanford, CA**
PhD Student in the Cochran Lab February 2020 – March 2022

- Evaluated utility of a new machine learning algorithm by testing computationally designed nanobodies for binding to the COVID-19 RBD domain
- Developed yeast libraries for engineering of protein ligand traps and identified high affinity binders to ligand
- Developed and optimized a pipeline for identifying intracellular signaling partners of T cell receptors in primary human T cells

MIT Department of Biological Engineering **Cambridge, MA**
Undergraduate Researcher in the Wittrup Group May 2017 – April 2019

- Developed and optimized in vitro assays to investigate T cell activation, contributing to mechanistic studies of checkpoint blockade therapies.
- Designed DNA primers to produce novel protein constructs for antibody affinity maturation via yeast surface display.
- Investigated the potential vaccinal effect of antibodies in mouse cancer models.
- Explored the potential to harness the allergic immune response against cancer cells.

MIT Department of Chemistry **Cambridge, MA**
Undergraduate Researcher in the Nolan Lab June 2016 – December 2016

- Optimized metal ion titration and displacement experiments to identify metal-binding properties of proteins involved in nutritional immunity
- Performed antimicrobial activity assays with sterile technique to assess the role of proteins in the immune response

PUBLICATIONS

- Sun Q, Barrett AK, Ogishi M, Lyu H, Jiang H, Liu H, Zhao Y, **Rodriguez GE**, Tao P, Obenaus M, Householder KD, Tang Q, Lanz TV, Garcia KC. Facile induction of immune tolerance by an interleukin-2-TGFβ surrogate agonist. *Nature*, (2026).
- **Rodriguez GE***, Zhao Y*, Nishiga Y, Peprah F, Shen J, Abhiraman GC, Ogishi M, Zhang C, Saco J, Waghray D, Serasanambati M, Torres L, Simone BW, Su L, Wilson SC, Yang

A, Sun Q, Picton L, Saxton RA, Bhandarkar V, Lee MJ, Andrews E, Jiang H, Obenaus M, Yen M, Atajanova T, Blish CA, Spranger S, Wherry EJ, Kirane A, Ribas A, Raulet DH, Kalbasi A, Dougan SK, Dougan M, Sage J, Garcia KC. Rewiring STAT signaling from the cell surface with Trikine immunotherapeutics. *Science*, (2026). *Authors contributed equally

- Breuer CB, Labrado M*, **Rodriguez GE***, Garcia KC, Reticker-Flynn NE. Type I interferon signaling instills divergent metastatic phenotypes and immunotherapy responses. *bioRxiv*, (2025). In Review. *Authors contributed equally
- Zhao Y, Ogishi M, Pal A, LL Su, P Tao, H Jiang, **GE Rodriguez**, X Chen, Q Sun, LW Rysavy, S Limsuwannarot, D Waghray, A Kalbasi, KC Garcia. Expanding the cytokine receptor alphabet reprograms T cells into diverse states. *Nature*, (2025).
- Breuer CB, Xiong Z, Wang A, **Rodriguez GE**, Abhiraman GC, Garcia KC, Reticker-Flynn NE. Spontaneous and experimental models of lymph node metastasis. *Nature Protocols*, (2025).
- Abhiraman GC, Householder KD, **Rodriguez GE**, Glassman CR, Saxton RA, Wilson SC, Su L, Yen M, Hsu C, Pillarisetty VG, Garcia KC. Redirecting immune signaling with cytokine adaptors. *Nature Communications*, 16: 2432 (2025).
- Chang K, Serasanambati M, Ogunlade B, Hsu H, Agolia J, Stiber A, Gu J, Chadokiya J, **Rodriguez GE**, Singh P, Sharma S, Gonçalves A, Verma O, Safir F, Vu N, Garcia KC, Delitto D, Kirane A, Dionne JA. Predicting targeted- and immunotherapeutic response outcomes in melanoma with single-cell Raman spectroscopy and AI. *bioRxiv*, (2025). In review.
- Caveney NA*, **Rodriguez GE***, Pollmann C*, Meyer T, Borowska MT, Wilson SC, Wang N, Xiang X, Householder K, Tao P, Su LL, Saxton RA, Piehler J, Garcia KC. Structure of the interleukin-5 receptor complex exemplifies the organizing principle of common beta cytokine signaling. *Molecular Cell*. 84 (10):1995-2005.e7 (2024). *Authors contributed equally
- Silberstein JL, Du J, Chan K, Frank JA, Mathews II, Kim YB, You J, Lu Qiao, Liu J, Philips EA, Liu P, Rao E, Fernandez D, **Rodriguez GE**, Kong X, Wang J, Cochran JR. Structural insights reveal interplay between LAG-3 homodimerization, ligand binding, and function. *PNAS*, 121 (12): e2310866121 (2024).
- Saxton RA, Caveney NA, Moya-Garzon MD, Householder KD, **Rodriguez, GE**, Burdsall KA, Long JZ, Garcia KC. Structural insights into the mechanism of leptin receptor activation. *Nature Communications*, 14(1): 1797 (2023).
- Cunden LS, Brophy MB, **Rodriguez GE**, Flaxman HA, Nolan EM. Biochemical and Functional Evaluation of the Intramolecular Disulfide Bonds in the Zinc- Chelating Antimicrobial Human S100A7 (Psoriasin). *Biochemistry*, *56*(43), 5726-5738 (2017).

PRESENTATIONS

Talks:

- **Rodriguez, GE.** (2026, March). Rewiring JAK/STAT signaling from the cell surface. Stanford Parker Institute for Cancer Immunotherapy and Stanford Cancer Institute Cancer Immunotherapy Seminar Series, Stanford, CA.
- **Rodriguez, GE.** (2025, May). Rewiring STAT signaling from the cell surface with Trikines enhances immunotherapy. Stanford Parker Institute for Cancer Immunotherapy Scientific Retreat, Santa Cruz, CA.
- **Rodriguez GE**. (2024, October) STAT rebalancing with engineered cytokines restrains T cell exhaustion and mitigates toxicity. ICIS Cytokines Conference, Seoul, South Korea.
- **Rodriguez GE**. (2024, August) STAT rebalancing with engineered cytokines restrains T cell exhaustion and mitigates toxicity. Stanford Molecular & Cellular Physiology Program, Santa Cruz, CA.
- **Rodriguez GE**. (2023, November) Rebalancing STAT signaling to expand immune cell functionality. Stanford Immunology Program Conference, Asilomar,

California.

Poster Presentations:

- **Rodriguez, GE,** Zhao Y, Abhiraman GC, Saco J, Kirane A, Ribas A, Kalbasi A, Garcia KC**.** (2026, March). Rewiring JAK/STAT signaling from the cell surface. Stanford Cancer Institute Research Conference, Stanford, CA.
- **Rodriguez GE,** Saco J, Torres L, Beltra JC, Abhiraman GA, Su LL, Saxton RA, Picton LK, Yen M, Wherry EJ, Ribas A, Garcia KC. (2023, October) Rebalancing STAT signaling to expand immune cell functionality. ICIS Cytokines Conference, Athens, Greece.
- **Rodriguez, GE,** Rothschilds, AM, Wittrup, KD. (2018, August). Development & Optimization of Assays for anti-CTLA-4 Mechanistic Studies. Amgen Scholars Poster Presentation, Cambridge, MA.
- **Rodriguez, GE,** Rothschilds, AM, Wittrup, KD. (2017, September). Harnessing the Allergic Immune Response for Cancer Therapy. Biology Undergraduate Student Association Summer Research Poster Session, Cambridge, MA.

PATENTS

- Kenan Christopher Garcia, **Grayson Rodriguez**, Leon Lih-Ren Su, Gita Chu Abhiraman, Pingdong Tao. Trikine engineered signaling proteins. US Patent Application Number PCT/U20S24/059408. Filed December 10, 2024, and published June 19, 2025.
- Kenan Christopher Garcia, Leon Lih-Ren Su, **Grayson Rodriguez**. Tunable cytokine receptor signaling domains. International Publication Number WO 2024/015723. Filed July 10, 2023, and published January 18, 2024.

FELLOWSHIPS & HONORS

- Mechanisms and Innovations in Cardiovascular Disease T32 Training Grant, Stanford University Cardiovascular Institute (2025-Present)
- Carl Storm Underrepresented Minority Fellowship to attend Angiogenesis Gordon Research Conference (2025)
- Representation in Science Postdoctoral Scholar, Parker Institute for Cancer Immunotherapy (2024-2025)
- International Cytokine & Interferon Society Travel Award (2024)
- Stanford Office of Graduate Education Travel Award (2023)
- Fifty 50 Scholar, Fifty Years (2022)
- National Science Foundation Graduate Research Fellowship Program (2020-2023)
- Stanford Graduate Fellowship, Gabilan Fellow (2019-2024)
- Stanford ADVANCE Summer Institute Scholar (2019)
- Royal Society of Chemistry Certificate of Excellence, MIT Chemistry Department (2019)

LEADERSHIP & OUTREACH

- **Stanford Cardiovascular Institute Summer Research Program**, Application Reviewer (2026)
- **Stanford Immunology Preview**, Student Panelist (2022, 2023)
- **Stanford Immunology Program Executive Committee,** Student Representative (2022-2023)
- **Saint Mary's School Board of Trustees**; Diversity, Equity, and Inclusion Committee Alumna Representative (2021-2022)
- **Community Associate,** Stanford Graduate Life Office (2021-2022)
- **Stanford Graduate Life Office**, Community Associate (2021-2022).
- **Stanford Bioengineering Research Experience for Undergraduates**, Mentor (2021)

- **Stanford Immunology Review for Applicants**, Mentor (2021)
- **Fair Opportunity Project**, Volunteer Mentor (2020-2021)
- **Biomedical Association for the Interests of Minority Students***, Co-Chair of Professional Development* (2020-2021)
- **Committee for Diversity and Inclusion in Immunology**, PhD student representative (2020-2021)

TEACHING

- Stanford University Immunology PhD Program, rotation student mentor (2025)
- Directed Study in Bioengineering, mentor to two undergraduate students (2021-2022)
- Biology and Disease of Hematopoiesis Teaching Assistant (2022)
- Advanced Immunology I Teaching Assistant (2021)
- Immunology Independent Study Leader (2020-2021)