# Matthew E. Griffin, Ph.D.

Assistant Professor of Chemistry
University of California, Irvine
2131 Natural Sciences 2; Irvine, CA 92697

griffin@uci.edu
mgriffinlab.com

## Professional Positions and Research Training

**Assistant Professor** 2022 – present
Department of Chemistry—University of California, Irvine (Irvine, CA)
Department of Molecular Biology and Biochemistry—University of California, Irvine (Irvine, CA)
Department of Pharmaceutical Sciences—University of California, Irvine (Irvine, CA)

**Hope Funds for Cancer Research Postdoctoral Fellow** 2018 – 2022
Laboratory of Chemical Biology—The Rockefeller University (New York, NY)
Department of Immunology and Microbiology—Scripps Research (La Jolla, CA)
Advisor: Howard C. Hang, Ph.D.

**National Science Foundation Graduate Research Fellow** 2010 – 2017
Department of Chemistry and Chemical Engineering—Caltech (Pasadena, CA)
Advisor: Linda C. Hsieh-Wilson, Ph.D.

**Undergraduate Researcher** 2008 – 2010
Department of Chemistry—Tulane University (New Orleans, LA)
Advisor: Janarthanan Jayawickramarajah, Ph.D.

**NSF REU Undergraduate Researcher, Université de Strasbourg** 2008
Laboratoire de Chimie Inorganique—Université de Strasbourg (Strasbourg, France)
Advisors: Dominique Matt, Ph.D. and Eric Brenner, Ph.D.

**Undergraduate Researcher, Tulane University** 2006 – 2008
Department of Chemistry—Tulane University (New Orleans, LA)
Advisor: Russell Schmehl, Ph.D.

## Education

**Ph.D. Chemistry**, Caltech (Pasadena, CA) 2017
Dissertation title: *"Discovering biological roles of glycosaminoglycans and protein O-GlcNAcylation using chemical tools."*

**B.S. Biological Chemistry**, summa cum laude, Tulane University (New Orleans, LA) 2010
**B.A. French**, summa cum laude
**B.F.A. Music Performance**, summa cum laude
Thesis title: *"Syntheses and binding studies towards a novel drug encapsulator."*
Thesis title: *"Musical calligrams of Francis Poulenc: shaping the poems of Guillaume Apollinaire."*

## Selected Awards and Honors

**V Scholar Award** 2023 – 2026
**NCI K22 Transition Career Development Award** 2023 – 2026
**American Cancer Society Institutional Research Seed Grant** 2022 – 2023
Best Speaker, Research in Progress Seminar Series, Scripps Research 2022
**Hope Funds for Cancer Research Postdoctoral Fellowship** 2019 – 2022
**Melanoma Research Foundation Career Development Award** 2019 – 2021
Keystone Symposium Future of Science Fund Travel Scholarship 2020
ASBMB Conference Travel Grant 2018
**National Science Foundation Graduate Research Fellowship** 2011 – 2014
Summa cum laude, B.S., B.A., B.F.A., Tulane University 2010
William Wallace Peery Medal for Academic Excellence 2010
Tulane 34 Award 2010
Phi Beta Kappa Induction 2010
Merck Index Award in Chemistry 2010
Jonathan E. Lorino Memorial Award in French 2010
Louis Bush Medal in French 2010
Sarah I. Nadler Memorial Award in Music 2010
Chi Lambda Omega Induction 2009

| | |
|---|---|
| Outstanding Research Award in Chemistry | 2009 |
| Alcée Fortier Memorial Prize in French | 2009 |
| Liz Earley Prize for Proficiency in Laboratory Science in Cell and Molecular Biology | 2009 |
| National Merit Scholar Award | 2005 |
| John Hainkel Louisiana Scholars Award | 2005 |

## Publications

*At UC Irvine.*

23. **Griffin ME**, Hang HC. "Microbial mechanisms to improve immune checkpoint blockade responsiveness." *Neoplasia*. **2022**, *31*: 100818. PMCID: PMC9284443. Review.

22. **Griffin ME**, Hsieh-Wilson LC. "Tools for mammalian glycoscience research." *Cell*. **2022**, *185* (15): 2657-2677. PMCID: PMC9339253. Review.

*Before UC Irvine.*

21. **Griffin ME***, Thompson JW*, Xiao Y*, Sweredoski MJ, Aksenfeld RB, Jensen EH, Koldobskaya Y, Schacht AL, Kim TD, Choudhry P, Lomenick B, Garbis SD, Moradian A, Hsieh-Wilson LC. "Functional glycoproteomics by integrated network assembly and partitioning." *bioRxiv,* **2023**, [preprint in review]. * denotes equal contribution. PMCID: 10312638. Research article.

20. Jang KK, Heaney T, London M, Ding Y, Yeung F, Ercelen D, Chen YH, Axelrad J, Gurunathan S, Marijke Keestra-Gounder A, **Griffin ME**, Hang HC, Cadwell K. "Antimicrobial overproduction sustains intestinal inflammation by inhibiting *Enterococcus* colonization." *Cell Host & Microbe*, **2023**, accepted. Research article.

19. Zhao X, Stein KR, Chen V, **Griffin ME**, Lairson LL, Hang HC. "Chemoproteomics reveals microbiota-derived aromatic monoamine agonists for GPRC5A." *Nat. Chem. Biol.* **2023**, online. Research article.

18. **Griffin ME***, Tsukidate T*, Hang HC. "*N*-arylpyrazole NOD2 agonists promote immune checkpoint inhibitor therapy." *ACS Chem Biol.* **2023**, *18* (6): 1368-1377. Research article

17. **Griffin ME**, Teijaro J, Hang HC. "Chemical immunology." In *Advanced chemical biology: Chemical dissection and reprogramming of biological systems.* 1st ed. Hang HC, Pratt MR, Prescher JA eds. Wiley, New York: **2023**. Book chapter.

16. **Griffin ME***, Klupt S*, Espinosa J*, Hang HC. "Peptidoglycan NlpC/P60 peptidases in bacterial physiology and host interactions." *Cell Chem. Biol.* **2023**, *30* (5): 436-456. PMCID: PMC10192474. Review.

15. **Griffin ME**, Espinosa J, Becker JL, Luo J-D, Carroll TS, Jha JK, Fanger GR, Hang HC. "*Enterococcus* peptidoglycan remodeling promotes checkpoint inhibitor cancer immunotherapy." *Science*. **2021**, *373* (6558): 1040-1046. PMCID: PMC9503018. Research article.

14. **Griffin ME**, Hang HC. "Improving immunotherapy response through the use of designer bacteria." *Cancer Cell*. **2021**, *39* (12): 1576-1577. Perspective.

13. Chen V, **Griffin ME**, Maguin P, Varble A, Hang HC. "RecT recombinase expression enables efficient gene editing in *Enterococcus*." *Appl. Environ. Microbiol.* **2021**, *87* (18): e0084421. PMCID: PMC8388837. Research article.

12. Cable J, Greenbaum B, Pe'er D, Bollard CM, Bruni S, **Griffin ME**, Allison JP, Wu CJ, Subudhi SK, Madris ER, Brentjens R, Sosman JA, Cemerski S, Zavitsanou AM, Proia T, Egeblad M, Nolan G, Goswami S, Spranger S, Mackall CL. "Frontiers in cancer immunology—a symposium report." *Ann. N. Y. Acad. Sci.* **2021**, *1489* (1): 30-47. Perspective.

11. **Griffin ME**, Sorum AW, Miller GM, Goddard III WA, Hsieh-Wilson LC. "Sulfated glycans engage the Ang/Tie pathway to regulate vascular development." *Nat. Chem. Biol.* **2021**, *17* (2): 178-186. PMCID: PMC8087285. Research article.

10. **Griffin ME**, Hespen CW, Wang Y-C, Hang HC. "Translation of peptidoglycan metabolites into immunotherapeutics." *Clin. Transl. Immunology.* **2019**, *8* (12): e1095. PMCID: PMC6883908. Review.

9. Wang Y-C*, Westcott NP*, **Griffin ME***, Hang HC. "Peptidoglycan metabolite photoaffinity reporters reveal direct binding to intracellular pattern recognition receptors and Arf GTPases." *ACS Chem. Biol.* **2019**, *14* (3): 405-414. PMCID: PMC6943928; * denotes equal contribution. Research article.

8. Thompson JW, **Griffin ME**, Hsieh-Wilson LC. "Methods for the detection, study, and dynamic profiling of O-GlcNAc glycosylation." *Meth. Enzymol.* **2018**, *598*: 101-135. PMCID: PMC5886303. Review.

7. **Griffin ME**, Jensen EH, Mason DE, Jenkins CL, Stone SE, Peters EC, Hsieh-Wilson LC. "Comprehensive mapping of *O*-GlcNAc modification sites using a chemically cleavable tag." *Mol. Biosys.* **2016**, *12* (6): 1756-1759. PMCID: PMC4905554. Research article.

6. **Griffin ME**, Hsieh-Wilson LC. "Glycan engineering for cell and developmental biology." *Cell Chem. Biol.* **2016**, *23* (1): 108-121. PMCID: PMC4857608. Review.

5. Pulsipher A*, **Griffin ME***, Stone SE, Hsieh-Wilson LC. "Long-lived glycan engineering to direct stem cell fate." *Angew. Chem. Int. Ed.* **2015**, *54* (5): 1466-1470. PMCID: PMC4533927; * denotes equal contribution. Research article.

4. Pulsipher A, **Griffin ME**, Stone SE, Brown JM, Hsieh-Wilson LC. "Directed neuronal signaling through cell-surface glycan engineering." *J. Am. Chem. Soc.* **2014**, *136* (19): 6794-6797. PMCID: PMC4120997. Research article.
3. Hsieh-Wilson LC, **Griffin ME**. "Improving biologic drugs via total chemical synthesis." *Science.* **2013**, *342* (6164): 1332-1333. PMCID: n/a (PMID: 24337286). Perspective.
2. **Griffin ME**, Hsieh-Wilson LC. "Synthetic probes of glycosaminoglycan function." *Curr. Opin. Chem. Biol.* **2013**, *17* (6): 1014-1022. PMCID: PMC3934325. Review.
1. Mishur RJ, **Griffin ME**, Battle CH, Shan B, Jayawickramarajah J. "Molecular recognition and enhancement of aqueous solubility and bioactivity of CD437 by β-cyclodextrin." *Bioorg. Med. Chem. Lett.* **2011**, *21* (2): 857-860. PMCID: PMC3057113. Research article.

## Patents

1. Hang HC, **Griffin ME**. "Modified microorganisms expressing SagA and related compositions for immunomodulation against infection and cancer immunotherapy." US2022/0168364A1.

## Invited Presentations

- Institute for Immunology Seminar Series, University of California, Irvine, Irvine, CA. 2023.
- Pharmaceutical Sciences Seminar, University of California, Irvine, Irvine, CA. 2023.
- San Diego Glycobiology Symposium, Glycobiology Research and Training Center, San Diego, CA. 2023.
- Molecular Biology and Biochemistry Seminar, University of California, Irvine, Irvine, CA. 2023.
- Chemical Biology Seminar, Memorial Sloan Kettering Cancer Center, New York, NY. 2022.
- Biochemistry Seminar, Duke University, Durham, NC. 2022.
- Organic Chemistry Seminar, University of California, Irvine, Irvine, CA. 2022.
- Hope Funds Scientific Meeting Seminar, Newport, RI. 2022.
- Chemical Biology Joint Meeting Seminar, Scripps Research, La Jolla, CA. 2021.
- Research in Progress Immunology and Microbiology Seminar, Scripps Research, La Jolla, CA. 2021.
- Hope Funds Scientific Meeting Seminar, Virtual. 2021.
- Harnessing the Microbiome for Disease Prevention/ Therapy. Keystone Symposia, Virtual. 2021.
- Frontiers in Cancer Immunotherapy 2020. New York Academy of Sciences, New York, NY. 2020.
- Inflammation, Microbiota, and Cancer. Keystone Symposia, Taipei, Taiwan. 2020. ** cancelled for COVID.*
- Chris Browne Center for Immunology Seminar. The Rockefeller University, New York, NY. 2019.
- Glycopolymer Probes Spotlight Session. ASBMB Conference, San Diego, CA. 2018.
- Gray-Hill Lecture Series. Occidental College, Los Angeles, CA. 2016.
- Chemistry and Chemical Engineering Seminar Day. Caltech, Pasadena, CA. 2016.
- Center for the Chemistry of Cellular Signaling Seminar Series. Caltech, Pasadena, CA. 2016.
- Next Generation Glycobiology Symposium, San Diego, CA. 2015.

## Current and Prior Support

*Current*

**The V Foundation – V Scholar Award** (V2023-009) 09/01/23 – 08/31/26
"Developing precision probiotics to overcome melanoma resistance to anti-PD-1 therapy."

**NIH – NCI K22 Transition Career Development Award** (1K22CA272915-01) 01/01/23 – 12/31/25
"Augmenting cancer checkpoint immunotherapies via microbially-derived metabolites."

**American Cancer Society Institutional Research Grant** (Round 27) 11/01/22 – 10/31/23
"Exploiting gut microbiota metabolites to combat melanoma metastasis."

**UC Irvine – Unrestricted setup funds** (grant no. N/A) 07/01/22 – (no expiration)

*Completed*

**Hope Funds for Cancer Research Postdoctoral Fellowship** (HFCR-19-03-02) 07/01/19-06/30/22
"Elucidation of commensal bacteria mechanisms in cancer immunotherapy."

**Melanoma Research Foundation Career Development Award** 10/01/19-09/30/22
"Augmenting melanoma response to immunotherapy via commensal microbiota."

**National Science Foundation Graduate Research Fellowship Program** 08/01/11-07/31/14

## Teaching

- **Instructor**, Department of Chemistry, University of California, Irvine
  Chem 51A: Organic Chemistry (undergraduate), Fall 2022.

## Service

*External community*

- **Ad-hoc manuscript reviewer:** *Gut Microbes*, *Pathogens*, *Nutrients*, *Trends in Microbiology*.
- **Ad-hoc grant reviewer:** Melanoma Research Foundation, Swiss National Science Foundation.
- **Panelist:** "Queer Science, Queer Scientists," Novozymes (2023).

*Department and university*

- **Member:** Graduate admissions committee, Chemistry Department, UC Irvine (2022 – present).
- **Chair:** Organic chemistry seminar series, Chemistry Department, UC Irvine (2023 – present).
- **Co-chair:** Organic chemistry seminar series, Chemistry Department, UC Irvine (2022 – 2023).
- **Co-chair:** Student-hosted seminar series, Chemistry Department, UC Irvine (2022 – present).
- **Panelist:** "LGBTQ+ Perspectives in STEM Academia," QTABS Annual Symposium, UC Irvine (2023).

## Mentorship

***Graduate Students***

- **Jack Leonard**, 2023—present, Chemistry
- **Samuel Pierce**, 2023—present, Pharm Sci
- **Bradley Richter**, 2023—present, Chemistry
- **Omar Ocegueda**, 2023—present, Pharm Sci
- **Natalie Falco**, 2022—present, Pharm Sci

***Undergraduate Students***

- **Astrid Lopez**, 2023, National Summer Undergraduate Research Program Fellow (2023)
- **Priscilla Jones**, 2022—present, Maximizing Access to Research Careers Fellow (2023), Summer Research Fellow (2023)
- **Minh Le**, 2022—present, Summer Research Fellow (2023)
- **Jessica Wu**, 2022—present, UCI Distinguished Research Fellow (2023), Summer Research Fellow (2023)

## Professional Memberships

- **Member**, American Chemical Society (2023 – present).
- **Member,** UCI Chao Family Comprehensive Cancer Center (2023 – present).
- **Member**, UCI Cancer Research Institute (2023 – present).
- **Member**, UCSD Glycobiology Research and Training Center (2023 – present).
- **Member**, UCI Institute for Immunology (2023 – present).
- **Member**, UCI Microbiome Center (2022 – present).
- **Member**, UCI Synthetic and Chemical Biology Club (2022 – present).