

ANTONIO DEL RIO FLORES

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Education

Assistant Professor of Chemical and Biological Engineering, University of Colorado Boulder **Starting Jan. 2026**
Visiting Assistant Professor of Chemical and Biological Engineering, University of Colorado Boulder **2025**
Stanford Science Postdoctoral Fellow, Chemistry, Stanford University (advisor: Chaitan Khosla) **2025**
Ph.D., Chemical Engineering, University of California, Berkeley (advisor: Wenjun Zhang) **2023**
B.S., Chemical Engineering/Biochemical Engineering, University of California, Davis **2018**

Publications (*denotes co-first author)

1. Kishore, S., Privalsky, T.M., **Del Rio Flores, A.**, Lynch, S.R. & Khosla, C. Self-Resistance Guided Discovery of a Hybrid Polyketide-Peptide Antibiotic from *Vibrio ruber*. *J. Am. Chem. Soc.* (2025). doi: 10.1021/jacs.5c07625
2. **Del Rio Flores, A.** & Khosla, C. Characterization of the Flavin-Dependent Monooxygenase Involved in the Biosynthesis of the Nocardiosis-Associated Polyketide. *Biochemistry* (2024). doi: 10.1021/acs.biochem.4c00480
3. **Del Rio Flores, A.***, Zhai, R.*, Kastner, D.W., Seshadri, K., Yang, S., De Matias, K., Shen, Y., Cai, W., Narayanamoorthy, M., Do, N.B., Xue, Z., Al Marzooqi, D., Kulik, H.J. & Zhang, W. Enzymatic synthesis of azide by a promiscuous N-nitrosylase. *Nat. Chem.* (2024). doi: 10.1038/s41557-024-01646-2
4. **Del Rio Flores, A.**, Zhai, R. & Zhang, W. Isonitrile Biosynthesis by Non-Heme Iron(II)-Dependent Oxidases/Decarboxylases. *Methods in Enzymology*, 704 (143-172) (2024). doi: 10.1016/bs.mie.2024.06.002
5. The Atomwise AIMS Program. AI Is a Viable Alternative to High Throughput Screening : A 318 - Target Study. *Sci. Rep.* **2024**, 14 (7526), 1–16. doi: 10.1038/s41598-024-54655-z.
6. Kishore, S., **Del Rio Flores, A.**, Lynch, S.R., Yuet, K.P., & Khosla, C. Discovery and Characterization of the Fully Decorated Nocardiosis Associated Polyketide Natural Product. *J. Am. Chem. Soc.* (2024). doi: 10.1021/jacs.3c13670.
7. **Del Rio Flores, A.**, Narayanamoorthy, M., Cai, W., Zhai, R., Yang, S., Shen, Y., Xue, Z., Seshadri, K., De Matias, K., & Zhang, W. Biosynthesis of Isonitrile Lipopeptide Metallophores from Pathogenic Mycobacteria. *Biochemistry* (2023). doi: 10.1021/acs.biochem.2c00611.
8. **Del Rio Flores, A.**, Kastner, D.W., Du, Y., Narayanamoorthy, M., Shen, Y., Cai, W., Vennelakanti, V., Zill, N.A., Dell, L.B., Kulik, H.K., & Zhang, W. Probing the mechanism of isonitrile formation by a non-heme iron(II)-dependent oxidase/decarboxylase. *J. Am. Chem. Soc.* (2022). doi: 10.1021/jacs.1c12891.
9. **Del Rio Flores, A.**, Barber, C.C., Narayanamoorthy, M., Gu, D., Shen, Y., & Zhang, W. Understanding and Engineering the Biosynthesis of Isonitrile and Alkyne-Containing Natural Products. *Annu. Rev. Chem. Biomol. Eng.* (2022). doi: 10.1146/annurev-chembioeng-092120-025140.
10. **Del Rio Flores, A.***, Twigg, F.F.*, Du, Y., Cai, W., Aguirre, D.Q., Sato, M., Dror, M.J., Narayanamoorthy, M., Geng, J., Zill, N.A., Zhai, R., & Zhang, W. Biosynthesis of Triacsin Featuring an N-hydroxytriazene Pharmacophore. *Nat. Chem. Bio* (2021). doi: 10.1038/s41589-021-00895-3.
11. Zhang, H., Goh, N., Wang, J., Pinals, R., Gonzalez-Grandio, E., Demirel, G., Butrus, S., Fakra, S., **Del Rio Flores, A.**, Zhai, R., Zhao, B., Park, S., & Landry, M. Nanoparticle Cellular Internalization is Not Required for RNA Delivery to Mature Plant Leaves. *Nat. Nano.* (2021). doi: 10.1038/s41565-021-01018-8.
12. **Del Rio Flores, A.***, Jonnalagadda, R.*, Cai, W., Mehmood, R., Narayanamoorthy, M., Ren, C., Zaragoza, J.T., Kulik, H.J., Zhang, W., & Drennan, C.L. Biochemical and crystallographic investigations into isonitrile formation by a non-heme iron dependent oxidase/decarboxylase. *J. Biol. Chem.* 296, 100231 (2021). doi: 10.1074/jbc.RA120.015932.

13. Li, J.S. Du, Y., Gu, D., Cai, W., Green, A., Ng, S., Leung, A., **Del Rio Flores, A.**, & Zhang, W. Discovery and Biosynthesis of Clostyrylpyrones from the Obligate Anaerobe *Clostridium roseum*. *Org. Lett.* (2020). doi: 10.1021/acs.orglett.0c02656.
14. Huang, Y.-B., Luo, Y.-J., **Del Rio Flores, A.**, Li, L.-C. & Wang, F. N-aryl pyrrole synthesis from biomass derived furans and arylamine over Lewis acidic Hf doped mesoporous SBA-15 catalyst. *ACS Sustain. Chem. Eng.* 0–6 (2020). doi: 10.1021/acssuschemeng.0c03578.
15. Skyrud, W., **Del Rio Flores, A.**, & Zhang, W. Biosynthesis of Cyclohexanecarboxyl-CoA Highlights a Promiscuous Shikimoyl-CoA Synthetase and a FAD-Dependent Dehydratase. *ACS Catal.* 10, 3360–3364 (2020). doi: 10.1021/acscatal.0c00406.
16. Huang, Y. B., Cai, W., **Del Rio Flores, A.**, Twigg, F. F. & Zhang, W. Facile Discovery and Quantification of Isonitrile Natural Products via Tetrazine-Based Click Reactions. *Anal. Chem.* (2019). doi: 10.1021/acs.analchem.9b05147.
17. Ren Y, Bai Y, Zhang Z, Cai W, & **Del Rio Flores A.** The Preparation and Structure Analysis Methods of Natural Polysaccharides of Plants and Fungi: A Review of Recent Development. *Molecules.* 2019; 24(17):3122. doi: 10.3390/molecules24173122.

Science Writing for the General Public Publications

1. **Del Rio Flores, A.** Unraveling the role of isonitriles for potential TB therapeutics. 2021. <https://qb3.berkeley.edu/news/unraveling-the-role-of-isonitriles-for-potential-tb-therapeutics/>

Awards and Honors

UC Davis Chemical Engineering Departmental Citation	2018
UC Berkeley Chancellor's Fellowship	2018-2020
UC Berkeley Graduate Remote Instruction Innovation Fellowship	2020
UC Berkeley Graduate Student Instructor Excellence Award	2020
SIMB Diversity Travel Award	2021
SIMB Carol D. Litchfield Best Student Poster Presentation Award	2021
UC Berkeley Outstanding Graduate Student Instructor Award	2021
ACS Division of Chemical Biology Founder's Award	2022
NSF Research Exchange Award	2022
UC Berkeley Outstanding Graduate Student Instructor Award	2022
Blavatnik Innovation Fellowship	2023
Benjamin Boussert Memorial Award	2023
AIChE IDEAL Star Award	2023
Stanford Science Postdoctoral Fellowship	2023-2025
Enzyme Mechanisms Conference Flash Talk Award	2024
Carl Storm Underrepresented Minority Fellowship	2024
Patten Faculty Fellowship	2026-2029

Mentoring

Arriana Bisram (PhD, Biological Engineering)	2024-Current
Ashlyn Huynh (PhD, Biomedical Engineering)	2025-Current
Dev Patel (PhD, Biomedical Engineering)	2025-Current

Talks

1. “Biosynthesis of Isonitrile Lipopeptide Metallophores from Pathogenic Mycobacteria”, Nov 2025. **Del Rio Flores, A.**, Khosla C., and Zhang, W. (AIChE 2025)
2. “Molecular and Mechanistic Interrogation of a "Split-and-Stuttering" Module of an Assembly-Line Polyketide Synthase”, Nov 2025. **Del Rio Flores, A.** and Khosla C. (AIChE 2025)
3. “Enzymatic synthesis of azide by a promiscuous N-nitrosylase”, July 2025. **Del Rio Flores, A.** and Zhang, W. (SIMB 2025)
4. “Enzymatic synthesis of azide by a promiscuous N-nitrosylase”, July 2024. **Del Rio Flores, A.** and Zhang, W. (SynBYSS 2024)
5. “Discovery and Characterization of the Fully Decorated Nocardiosis-Associated Polyketide Natural Product”, October 2024. **Del Rio Flores, A.** and Khosla, C. (AIChE 2024)
6. “Enzymatic synthesis of azide by a promiscuous N-nitrosylase”, July 2024. **Del Rio Flores, A.** and Zhang, W. (GRC Enzymes, Coenzymes, and Metabolic Pathways 2024)
7. “Enzymatic synthesis of azide by a promiscuous N-nitrosylase”, May 2024. **Del Rio Flores, A.** and Zhang, W. (ASIM 2024)
8. “Discovery of a Pathway for Azide Biosynthesis By a Promiscuous N-Nitrosylase”, January 2024. **Del Rio Flores, A.** and Zhang, W. (EMC 2024)
9. “Discovery of a Pathway for Azide Biosynthesis By a Promiscuous N-Nitrosylase”, November 2023. **Del Rio Flores, A.** and Zhang, W. (AIChE 2023)
10. “Maturation of an *Escherichia coli* Ribosomal Peptide Antibiotic by ATP-consuming N-P Bond Formation in Microcin C7”, October 2023. **Del Rio Flores, A.** (Christopher T. Walsh Chemical Biology Teach-In)
11. “Biosynthesis of Bioorthogonal Synthons in Natural Products”, September 2023. **Del Rio Flores, A.** (SynBYSS 2023)
12. “Biosynthesis of Triacsin Featuring an N-hydroxytriazene Pharmacophore”, November 2022. **Del Rio Flores, A.** and Zhang, W. (AIChE 2022)
13. “Probing the mechanism of isonitrile formation by a non-heme iron(II)-dependent oxidase/decarboxylase”, August 2022. **Del Rio Flores, A.**, Kastner, D.W., Du, Y., and Zhang, W. (SIMB 2022)
14. “Biosynthesis of Triacsin Featuring an N-hydroxytriazene Pharmacophore”, November 2022. **Del Rio Flores, A.** and Zhang, W. (WiscProf 2022)
15. “Biosynthesis of Triacsin Featuring an N-hydroxytriazene Pharmacophore”, January 2022. **Del Rio Flores, A.**, Twigg, F.F., Du, Y., and Zhang, W. (EMC 2022)
16. “Biosynthesis of Triacsin Featuring an N-hydroxytriazene Pharmacophore”, December 2021. **Del Rio Flores, A.**, Twigg, F.F., Du, Y., and Zhang, W. (CheE Future Faculty Diversity Seminar 2021)

Teaching Experience

Biochemical Engineering Laboratory (CBE C170L), UC Berkeley Jan. 2020- May 2020

- Lead undergraduate and masters students in performing a series of bioprocessing experiments with relevant industrial applications.
- Helped design laboratories for the course and associated handouts/resources for students.

Biochemical Engineering Laboratory (CBE C170L), UC Berkeley Aug. 2020- Dec. 2020

- Helped re-design class into a remote/hybrid course during the pandemic.
- Lead undergraduate and masters students in performing a series of bioprocessing experiments remotely and hosted an in-person bioreactor demonstration session.

Biochemical Engineering Laboratory (CBE C170L), UC Berkeley **Aug. 2021- Dec. 2021**

- Played a pivotal role in course design as an experienced GSI with significant contributions towards experimental design, advising a lecturer about course design, and mentoring graduate and undergraduate students in collaborative projects.

Biochemical Engineering Laboratory (CBE C170L), UC Berkeley **Jan. 2022- May 2022**

- Helped to re-design course to satisfy ABET accreditations.
- Developed syllabus and experiments for the course.

Biochemical Engineering Laboratory (CBE C170L), UC Berkeley **Aug. 2022- Dec 2022**

- Developed syllabus and experiments for the course.

Biochemical Engineering Laboratory (CBE C170L), UC Berkeley **Jan. 2023- May 2023**

- Developed syllabus and experiments for the course.

Certificate in Teaching and Learning in Higher Education **Aug. 2018-May 2023**

- Attended various teaching workshops related to student learning, course design, establishing an inclusive classroom, and developing novel strategies in assessing student learning

Technical and Professional Society Memberships

- American Institute of Chemical Engineers (AIChE), American Chemical Society (ACS), and Society for Industrial Microbiology and Biotechnology (SIMB)

Languages

Spanish- Native Language, **English-** Full Proficiency, **Portuguese-** Proficient, **French-** Conversationally Fluent