Antonio Tinoco Valencia, Ph.D.

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PROFESSIONAL POSITIONS HELD

Postdoctoral Research Fellow
Harvard University, Department of Chemistry and Chemical Biology, Cambridge, MA **September 2020–Present**
Research advisor: Prof. Emily P. Balskus

EDUCATION and TRAINING

Microbial Diversity Summer Course **Summer 2022**
Marine Biological Laboratory, University of Chicago, Woods Hole, MA
Independent research project title: "Discovery and characterization of marine viruses in Great Sippewissett"

Ph.D. in Chemistry **June 2020**
University of Rochester, Rochester, NY
NASEM Ford Foundation Predoctoral Fellow **2017–2020**
M.S. in Chemistry **March 2017**
Research advisor: Prof. Rudi Fasan

B.S. in Chemistry with Departmental Honors, *cum laude* **June 2015**
California State University, Los Angeles, Los Angeles, CA
Research advisor: Prof. Alison McCurdy

Other research experiences:

Stanford University, Department of Bioengineering, Palo Alto, CA **March 2023**
Research University Alliance Research Exchange Fellow
Mentor: Prof. Kerwyn Casey Huang
University of Southern California, Department of Chemistry, Los Angeles, CA **Summer 2013**
Research advisor: Prof. Richard L. Brutchey

AWARDS and HONORS

MIT Chemistry Future Faculty Award, Department of Chemistry, Massachusetts Institute of Technology **2023**
Postdoctoral Award for Professional Development, FAS Office for Postdoctoral Affairs, Harvard University **2023**
Career Award at the Scientific Interface (Finalist), Burroughs Wellcome Fund **2022 & 2023**
Runner-Up for Best Poster Award, 2023 Massachusetts Institute of Technology Microbiome Symposium **2023**
William Randolph Hearst Foundation Scholarship, Marine Biological Laboratory **2022**
Outstanding Graduate Student Award, Department of Chemistry, University of Rochester **2019**
ACS Student Exchange Award, The American Chemical Society **2018**
Best Oral Presentation in Organic Chemistry Award, 2018 SACNAS Diversity in STEM National Conference **2018**
SACNAS Travel Scholarship, Society for Advancement of Chicanos and Native Americans in Science **2018**
Division of Organic Chemistry Travel Award, Division of Organic Chemistry, The American Chemical Society **2018**
Chemistry Department Travel Award, Department of Chemistry, University of Rochester **2017**
W.D. Walters Award in Undergraduate Teaching, Department of Chemistry, University of Rochester **2017**
Ford Foundation Predoctoral Fellowship, The National Academies of Sciences, Engineering and Medicine **2017–2020**
Arnold Weissberger Memorial Fellowship, Department of Chemistry, University of Rochester **2016–2017**
Anheuser-Busch Scholarship, Hispanic Scholarship Fund **2015**
Dean's List, College of Natural and Social Sciences, CSU Los Angeles **2014–2015**
Gutierrez-Tunstad Chemistry Scholarship, Department of Chemistry and Biochemistry, CSU Los Angeles **2015**
Richard Perrigan Award, Department of Chemistry and Biochemistry, CSU Los Angeles **2014**
GRIFOLS Scholarship, Department of Chemistry and Biochemistry, CSU Los Angeles **2014**
ACS Student Leadership Award, The American Chemical Society **2013**

PEER-REVIEWED PUBLICATIONS

9. **Tinoco, A.**; Plichta, D.; Li, C.; Berdy, B.; Kenny, D. J.; Khurana, J.; Xavier, R.; Balskus, E. "Discovery of the bacterial metalloenzyme IsmB revises the pathway for cholesterol metabolism by the human gut microbiome" (In preparation).

8. Li, C.; Stražar, M.; Mohamed, A.; Pacheco, J. A.; Walker, R. L.; Lebar, T.; Ang, Q. A.; Berdy, B.; Sergio, D.; Ivernizzi, R.; **Tinoco, A.**; Pischany, G.; Vasan, R. S.; Balskus, E.; Huttenhower, C.; Vlamakis, H.; Clish, C.; Shaw, S. Y.; Plichta, D.; Xavier, R. "Gut microbiome and metabolome profiling in Framingham Heart Study reveals cholesterol-metabolizing bacteria linked with lower cardiovascular risk" *Cell* (Under review).

7. Nam, D.†; **Tinoco, A.**†; Shen, Z.; Adukure, R.; Sreenilayam, G.; Khare, S. D.; Fasan, R. "Enantioselective Synthesis of α-Trifluoromethyl Amines via Biocatalytic N−H Bond Insertion with Acceptor-Acceptor Carbenes." *J. Am. Chem. Soc.* **2022** *144,* 2590−2602. DOI: 10.1021/jacs.1c10750
*****Highlighted in: *Synfacts* **2022**, *18*, 543; *Synfacts* **2022,** *18,* 819

6. **Tinoco, A.**†; Wei, Y.†; Bacik, J. P.; Carminati, D. M.; Moore, E.J.; Ando, N.; Zhang, Y.; Fasan, R. "Origin of High Stereocontrol in Olefin Cyclopropanation Catalyzed by an Engineered Carbene Transferase**."** *ACS Catal.* **2019,** *9,* 1514–1524. DOI: 10.1021/acscatal.8b04073

5. Vargas, D. A.; **Tinoco, A.**; Tyagi, V.; Fasan, R. "Myoglobin-Catalyzed C−H Functionalization of Unprotected Indoles." *Angew. Chem. Int. Ed.* **2018,** *57,* 9911–9915. DOI: 10.1002/anie.201804779

4. Wei, Y.; **Tinoco, A.**; Steck, V.; Fasan, R.; Zhang, Y. "Cyclopropanations via Heme Carbenes: Basic Mechanism and Effects of Carbene Substituent, Protein Axial Ligand, and Porphyrin Substitution." *J. Am. Chem. Soc.* **2018,** *140*, 1649–1662**.** DOI: 10.1021/jacs.7b09171

3. **Tinoco, A.**; Steck, V.; Tyagi, V.; Fasan, R. "Highly Diastereo- and Enantioselective Synthesis of Trifluoromethyl-Substituted Cyclopropanes via Myoglobin-Catalyzed Transfer of Trifluoromethylcarbene." *J. Am. Chem. Soc.* **2017,** *139,* 5293–5296. DOI: 10.1021/jacs.7b00768
*Highlighted in: *Chem. Eng. News* **2017,** *95,* 5; *Synfacts* **2017**, *13*, 762; *J. Am. Chem. Soc.* **2017,** *139,* 14331.

2. Tyagi, V.; Sreenilayam, G.; Bajaj, P.; **Tinoco, A.**; Fasan, R. "Biocatalytic Synthesis of Allylic and Allenyl Sulfides via a Myoglobin-Catalyzed Doyle-Kirmse Reaction." *Angew. Chem. Int. Ed.* **2016,** *55,* 13562–13566. DOI: 10.1002/anie.201607278

1. Culver, S. P.; Greaney, M. J.; **Tinoco, A.**; Brutchey, R. L. "Low-Temperature Synthesis of Homogeneous Solid Solutions of Scheelite-Structured $Ca_{1-x}Sr_xWO_4$ and $Sr_{1-x}Ba_xWO_4$ Nanocrystals." *Dalton Trans.* **2015,** *44,* 15042–15048. DOI: 10.1039/C5DT01722J

† contributed equally

LETTERS and ESSAYS

2. **Tinoco, A.** "Dreaming of a future in chemistry." *Chem. Eng. News* **2018,** *96,* 34.
1. **Tinoco, A.** "Speaking out for undocumented students." *Chem. Eng. News* **2017,** *95,* 2.

INVITED TALKS and SEMINARS

"Deciphering Human Gut Microbial Cholesterol Metabolism Using Chemical and Engineering Tools." **Antonio Tinoco Valencia**. 2023 MIT Chemistry Future Faculty Symposium, Cambridge, MA. August 22nd, 2023.

"Discovery of the Bacterial Metalloenzyme IsmB Revises the Pathway for Cholesterol Metabolism by the Human Gut Microbiome." **Antonio Tinoco Valencia**, Emily P. Balskus. Synthetic Biology Gordon Research Conference, Newry, ME. July 20th, 2023.

"Harnessing enzymatic chemistry for the treatment of human disease." **Antonio Tinoco Valencia.** Biology Postdocs and Associate-Scientists Seminar Series, Columbia University in the City of New York, New York, NY, October 7th, 2021.

CONTRIBUTED PRESENTATIONS

Oral

"Elucidation and Engineering Cholesterol Metabolism in the Human Gut Microbiome." **Antonio Tinoco**. Research University Alliance Research Exchange, Department of Bioengineering, Stanford University, Palo Alto, CA. March 10th, 2023.

"Mechanistic Investigation of Stereoselective Olefin Cyclopropanation Catalyzed by an Engineered Carbene Transferase." **Antonio Tinoco**, Rudi Fasan. 258th American Chemical Society National Meeting & Exposition, San Diego, CA. August 27th, 2019.

"Mechanistic Investigation of Stereoselective Olefin Cyclopropanation Catalyzed by an Engineered Carbene Transferase." **Antonio Tinoco**, Rudi Fasan. 2019 Western New York Inorganic Symposium, Rochester, NY. June 8th, 2019.

"Myoglobin-Catalyzed Asymmetric Synthesis of Trifluoromethyl-Substituted Cyclopropanes." **Antonio Tinoco**, Rudi Fasan. 2018 Society for the Advancement of Chicanos and Native Americans in Science National Diversity in STEM Conference, San Antonio, TX. October 11th, 2018.
*****Awarded 'Best Oral Presentation in Organic Chemistry'

"Asymmetric synthesis of trifluoromethyl-substituted cyclopropanes via myoglobin-catalyzed transfer of trifluoromethylcarbene." **Antonio Tinoco**, Rudi Fasan. 255th American Chemical Society National Meeting & Exposition, New Orleans, LA. March 18th, 2018.

"Myoglobin-Catalyzed Asymmetric Synthesis of Trifluoromethyl-Substituted Cyclopropanes." **Antonio Tinoco**, Rudi Fasan. Synthesis, Catalysis and Mechanism Cluster Retreat, Brighton, NY. January 12th, 2018.

"Mimicking Cellular Communication Through a Calcium-Selective Reversible Phototrigger." **Antonio Tinoco**, Alison McCurdy. 23rd Annual Cal State L.A. Symposium on Research, Scholarship and Creative Activity, Los Angeles, CA. February 27th, 2015.

Poster

"Discovery of the Bacterial Metalloenzyme IsmB Revises the Pathway for Cholesterol Metabolism by the Human Gut Microbiome." **Antonio Tinoco Valencia**, Damian Plichta, Chenhao Li, Douglas Kenny, Ramnik J. Xavier, Emily P. Balskus. Synthetic Biology Gordon Research Conference, Newry, ME. July 20th, 2023.

"Discovery of the Bacterial Metalloenzyme IsmB Revises the Pathway for Cholesterol Metabolism by the Human Gut Microbiome." **Antonio Tinoco Valencia**, Damian Plichta, Chenhao Li, Douglas Kenny, Ramnik J. Xavier, Emily P. Balskus. Synthetic Biology Gordon Research Seminar, Newry, ME. July 16th, 2023.

"Discovery of the Bacterial Metalloenzyme IsmB Revises the Pathway for Cholesterol Metabolism by the Human Gut Microbiome." **Antonio Tinoco Valencia**, Damian Plichta, Chenhao Li, Douglas Kenny, Ramnik J. Xavier, Emily P. Balskus. 20th Annual Microbial Sciences Initiative Symposium, Harvard University, Cambridge, MA. April 30th, 2023.

"Discovery of the Bacterial Metalloenzyme IsmB Revises the Pathway for Cholesterol Metabolism by the Human Gut Microbiome." **Antonio Tinoco Valencia**, Damian Plichta, Chenhao Li, Douglas Kenny, Ramnik J. Xavier, Emily P. Balskus. 2023 MIT Microbiome Symposium, Cambridge, MA. April 7th, 2023.
*Awarded 2nd Place for 'Best Poster' Award

"Myoglobin-Catalyzed Asymmetric Synthesis of Trifluoromethyl-Substituted Cyclopropanes." **Antonio Tinoco**, Rudi Fasan. 2017 Conference of Ford Fellows, National Academy of Sciences, Washington, D.C. May 5th, 2018.

"Synthesis of a calcium-selective phototrigger." **Antonio Tinoco**, Alison McCurdy. 248th American Chemical Society National Meeting & Exposition, San Francisco, CA. August 12th, 2014.

"Synthesis of a calcium-selective phototrigger." **Antonio Tinoco**, Alison McCurdy. 32nd Annual ACS Southern California Undergraduate Research Conference, Irvine, CA. April 12th, 2014.

"Syntheses of Perovskite and Scheelite-Structured Nanocrystals Using a Vapor Diffusion Sol-Gel (VDSG) Technique." **Antonio Tinoco**, Sean Culver, Richard L. Brutchey. 2013 ELAC MESA/STEM Research Symposium, Monterey Park, CA. September 25th, 2013.

TEACHING ACTIVITIES

Invited Lecturer, University of Rochester, Department of Chemistry

- **CHM 171,** First-Year Organic Chemistry, with Prof. Rudi Fasan **Fall 2019**
  Covered the topics of straight-chain and cyclic-alkane conformational analysis, thermodynamics and kinetics

Graduate Teaching Assistant, University of Rochester, Department of Chemistry

- **CHM 234,** Advanced Laboratory Techniques, with Prof. Rudi Fasan **Spring 2016 & 2017**
  Junior- and senior-level students were taught advanced synthetic techniques for the synthesis, characterization, and analysis of complex inorganic and organic molecular structures
- **CHM 207,** Organic Chemistry Laboratory I, with Prof. Bradley L. Nilsson **Fall 2015**
  Sophomore-level students were taught fundamental organic chemistry laboratory techniques to learn of the reactivity and characterization of organic molecules

ADDITIONAL EDUCATION and TRAINING

Undergraduate Mentoring Workshop Certificate, FAS Division of Science, Harvard University **Spring 2022**
Anaerobes Nanocourse, **Harvard Medical School,** Boston, MA **Winter 2021**
Project title: *"Collinsella aerofaciens* ATCC 25986"
Instructor: Prof. Dr. Lynn Bry

STUDENTS MENTORED

Bryan Bañuelos Jara, G2 graduate student, Harvard University, Chemical Biology program **Fall 2023–Present**
Jai K. Khurana, Undergraduate student and Concurrent Master's Candidate, Harvard College **Spring 2022–present**
Malik Nelson, High school student, Harvard Ed Portal High School Lab Skills Program **Summer 2023**
Luís E. Valentin-Alvarado, G5 graduate student, UC Berkeley, Research University Alliance **Fall 2022**
Marina Monsivais, G1 graduate student, Harvard University, Chemistry and Chemical Biology **Fall 2022**
Weiyi Ma, G2 graduate student, Harvard University, Chemistry and Chemical Biology **Summer 2021**
David A. Vargas, G1 graduate student, University of Rochester, Department of Chemistry **Summer & Fall 2017**

SERVICE

Committee Member, Committee on Diversity, Inclusion, Equity and Belonging, Harvard University, Department of Chemistry and Chemical Biology **2021–present**

- Currently serve on the Mentoring and Awareness subcommittee to help improve mentorship to all members in the CCB community, with particular attention to the URM experience, and address diversity in the faculty hiring process

Mentor, Graduate School Mentorship Initiative, Científico Latino **2020–2022**

- Served as a mentor to advise underrepresented minority undergraduate- and master-level graduate students through the Ph.D. application process, help prepare for graduate visitation interviews, and help them gain equal access to fellowship opportunities
- Students Mentored:
  Kenia Mejia Escobar, Ph.D. candidate in chemical biology, University of Michigan, Ann Arbor, MI
  Roberto Léon Baxin, Ph.D. candidate in chemistry, University of Rochester, Rochester, NY

Local-National Relations Coordinator, Alliance for Diversity in Science and Engineering **2020–2021**

- Served in the National Organizing Board to address chapter concerns to the Board of Directors, moderate inter-chapter communications, assist new chapters through the application/on-boarding process and connect new chapters with established chapters for advice and insight

Founding Committee Member, Graduate Student and Postdoctoral Fellow Council, Office of the Provost, University of Rochester **2019–2020**

- Previously worked with the Dean of Graduate Education and Vice Provost, Prof. Melissa Sturge-Apple, and graduate student leaders and post-doctoral fellows to improve graduate student life and climate, education, equity and inclusion at all the University of Rochester campuses

President & Founder, Alliance for Diversity in Science and Engineering (ADSE) Chapter at Rochester, University of Rochester **2018–2020**

- Created a platform for the scholarship and professional development of underrepresented minorities in the pursuit of advanced degrees and careers in STEM
- Connected graduate students across the University of Rochester campus by working closely with the David T. Kearns Center, the Deans Office of the School of Arts, Sciences and Engineering and the School of Medicine and Dentistry; assisted in showcasing non-traditional career paths and minority experiences in academia, industry, and government through the Diversity in STEM Lecture Series, and helped educate students at all levels about opportunities in STEM

***Ad hoc* Committee Chair,** Seymour Rothchild Distinguished Lecture Committee, Department of Chemistry, University of Rochester **2019–2020**

- Served as the committee graduate student chair for the 2019-2020 Seymour Rothchild Distinguished Lecture
- Prof. Eric N. Jacobsen from Harvard University was selected and delivered his lecture on February 10th, 2020

Committee Member, Chemistry Graduate Association, Department of Chemistry, University of Rochester **2015–2018**

- Assisted in the planning of departmental events and community outreach activities; acted as the liaison between graduate students and department faculty and staff; assisted in bringing university resources and services to graduate students in the department

- Organized and fundraised for the 2018 National Chemistry Week Celebration themed “Chemistry is Out of This World”; 550 K–6 students engaged in hands-on chemistry demonstrations and experiments related to the chemistry occurring in our solar system in partnership with the Rochester City School District, Rochester ACS Local Section, and Wegmans Food Markets

Chemical Safety Student Assistant, Risk Management, Environmental Health and Safety, CSU Los Angeles **2014–2015**
- Assisted in the removal of hazardous chemical and biological waste from research and instructional laboratories; enforced safe laboratory practices and the proper storage of chemicals; conducted inspections of laboratories and related work areas

President, American Chemical Society Certified Student Chapter, East Los Angeles College **2010–2012**
- ACS Student Chapter Award Recipient: Outstanding, 2011-2012; Commendable, 2010-2011
- Student chapter was awarded an ACS Innovative Project Grant and initiated the International Year of Chemistry Project at Brightwood School to teach 5th grade students water chemistry, green chemistry practices, and environmental science
- Student chapter was awarded an ACS Undergraduate Programming at Regional Meetings Grant and hosted the 43rd ACS Western Regional Meeting - Undergraduate Program in Pasadena, CA during the Fall of 2011

OUTREACH ACTIVITIES

Keynote speaker and panelist, Caltech DREAMers in STEM Day, California Institute of Technology **2023**
Panelist, Meet a Scientist Roundtable Discussion, Maria L. Baldwin School **2022**
Harvard CCB Representative, Harvard GSAS Booth, SACNAS Graduate School Expo **2021**
Panelist, Postdoc Panel, SACNAS Chapter at the University of California, Los Angeles **2021**
Panelist, Graduate Students of Color Alumni Panel, David T. Kearns Center, University of Rochester **2021**
Harvard CCB Representative, Harvard GSAS Booth, ABRCMS Graduate School Expo **2020**
Poster Judge, Annual Biomedical Research Conference for Minority Students (ABRCMS) **2020**
Panelist, DACA in STEM Panel, WAVE Fellows Program, California Institute of Technology **2020**
Panelist, ‘Basically PhD’ Webinar, David T. Kearns Center, University of Rochester **2020**
Panelist, McNair Scholars Program Luncheon, University of Rochester **2019**
Chemistry Outreach Volunteer*,* Fasan Group, Department of Chemistry, University of Rochester **2018**
STEM Peer Mentor*,* MESA/STEM Program, East Los Angeles College **2017**
Graduate Mentor*,* Department of Chemistry, University of Rochester **2016–2020**
Volunteer, National Chemistry Week, Rochester City School District & University of Rochester **Fall 2016, 2017, 2018**
Volunteer, Warner School of Education Horizons Program, University of Rochester **2015, 2016, 2018**
Panelist, Successful Alumni Panel Discussion*,* East Los Angeles College STEM Leadership Retreat **2015**

INTERVIEWS

“Episode 29: Dr. Antonio Tinoco Valencia.” My Favorite Queer Chemist, Season 1, August 27th, 2020. https://anchor.fm/mfqc/episodes/Dr--Antonio-Tinoco-Valencia--Harvard-University-eiojjo/a-a32ai68

PROFESSIONAL MEMBERSHIPS

American Society for Microbiology (ASM) **2021–Present**
American Society for Biochemistry and Molecular Biology (ASBMB) **2019–Present**
Alliance for Diversity in Science and Engineering (ADSE) **2018–Present**
American Association for the Advancement of Science (AAAS) **2017–Present**
Society for Advancement of Chicanos and Native Americans in Science (SACNAS) **2011–Present**
American Chemical Society (ACS) **2010–Present**
Divisions: Organic, Biological, Inorganic