Dr. Pablo Sobrado

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EDUCATION

Ph.D. in Biochemistry, Texas A&M University, College Station, TX (August 2003) Advisor: Dr. Paul F. Fitzpatrick
B.A. in Biology, Merrimack College, North Andover, MA (May 1997)

PROFESSIONAL EXPERIENCE

2024-	Richard K. Vitek/FCR Endowed Chair of Biochemistry, Department of Chemistry, Missouri Univerity of Science and Technology, Rolla, MO
2024-	Professor, Department of Chemistry, Missouri Univerity of Science and Technology, Rolla, MO
2024-	Professor, Department of Biology, Missouri Univerity of Science and Technology, Rolla, MO
2024	Principal Scientist, Fralin Hall, Virginia Tech, Blacksburg, VA
2016-2024	Professor, Department of Biochemistry, Virginia Tech, Blacksburg, VA
2016-2024	Professor of Health Sciences, Virginia Tech, Blacksburg, VA
2021-2023	Program Director, Division of Chemistry, National Science Foundation, Alexandria, VA
2019-2021	Associate Department Head, Department of Biochemistry, Virginia Tech, Blacksburg, VA
2010-2020	Adjunct Professor, Department of Biology, Costa Rica Institute of Technology, Cartago, Costa Rica
2012-2016	Associate Professor, Department of Biochemistry, Virginia Tech, Blacksburg, VA
2014-2016	Associate Professor of Health Sciences, Virginia Tech, Blacksburg, VA
2007-2012	Assistant Professor, Department of Biochemistry, Virginia Tech, Blacksburg, VA
2004-2007	Research Associate, Department of Biochemistry, University of Wisconsin, Madison, WI Advisor: Dr. Brian G. Fox
2003-2004	Postdoctoral Fellow, Instituto de Ciencias Biomédicas, Facultad de Medicina, Universidad de Chile, Santiago, Chile, Advisor: Dr. Jorge E. Allende

HONORS

2021	Martin H. Freeman Lecture, Middlebury College, Middlebury, VT
2017	Keynote Speaker, 8th Southeast Enzyme Conference, Atlanta, GA
2014	Excellence in Basic Research Award from the College of Agriculture and Life Sciences
2014	ASBMB Research Spotlight for the month of March
2013	Everson Lecture, University of Wisconsin, Madison, WI
2011	National Technology Prize, Clodomiro Picado Twight, Costa Rica
2011	Grand Marshal, Central America Independence Day Celebration, Los Angeles, CA
2010	J. Shelton Horsley Research Award from the Virginia Academy of Sciences
2009	Allan T. Gwathmey Chemistry Award from the Virginia Academy of Sciences
2009	Ralph Powe Junior Faculty Enhancement Award from the Oak Ridge Associated Universities (ORAU)
2005-07	American Heart Association Postdoctoral Fellowship
2004-05	Postdoctoral Fellowship from the National Center for Technology and Scientific Investigation (CONICIT) of Costa Rica
2004	The International Centre for Genetic Engineering and Biotechnology (ICGEB), Fellowship to Participate in the Course: Petroleum and Biotechnology
2004	Red Latinoamericana de Ciencias Biológicas (RELAB) Travel Award Fellowship
2002	NIH Travel Grant to attend the 14th International Symposium on Flavins

and Flavoproteins, Cambridge University, United Kingdom
2002-03 Predoctoral Fellowship from the National Center for Technology and Scientific Investigation (CONICIT) of Costa Rica
2002 International Education Scholarship, Texas A&M University
1994-96 Dean's List, Merrimack College

PROFESSIONAL ACTIVITIES

2023-24 Co-Chair, Gordon Research Conference on Enzymes, Co-Enzymes, and Metabolic Pathways
2022-23 Co-Vice-Chair, Gordon Research Conference on Enzymes, Co-Enzymes, and Metabolic Pathways
2020 Program Review Committee Member (undergraduate program), University of California, Riverside
2016-20 National Institute of Health-Macromolecular Structure and Function- A, Permanent Member
2019 Organizer: "Enzymes: From Isotope Effects to Allostery" Symposium, University of Texas Medical Center, April 26-27, 2019, San Antonio, TX
2019 Organizer and Chair: "Catalysis and Enzyme Action" Session Organizer and Chair, American Society for Biochemistry and Molecular Biology, April 6-9, 2019, Orlando FL
2017 Co-Guest Editor, Archives of Biochemistry and Biophysics, Special Issue: "Flavoproteins: Beyond the Classics"
2016 Chair, 7th Southeast Enzyme Conference
2011 Founding Member, Virginia Tech Center for Drug Discovery (VTCDD)
2015 National Science Foundation, CAREER Award Advisory Panel
2015 Alzheimer's and Related Diseases Research Fund (ARDRAF) Panel
2015 National Institutes of Health, Fellowship Review Study Section
2015 National Science Foundation, Mechanistic Biophysics Advisory Panel
2014 National Institutes of Health, Fellowship Review Study Section
2014 National Institutes of Health, Biological Chemistry and Macromolecular Biophysics Study Section
2014 Alzheimer's and Related Diseases Research Fund (ARDRAF) Panel
2013 National Institute of Health, Macromolecular Structure and Function- E Study Section
2012 National Science Foundation, Structural Biochemistry Advisory Panel
2012 National Institute of Health, Macromolecular Structure and Function- E Study Section
2010 National Science Foundation, Structural Biochemistry Advisory Panel
2010 Alzheimer's and Related Diseases Research Fund (ARDRAF) Panel

Associate Editor

2022- present Archives of Biochemistry and Biophysics
2022- present Frontiers in Microbiology-Antimicrobial, Resistance and Chemotherapy

Editorial Boards

2019- present Journal of Biological Chemistry
2014- 2023 Journal of Fungi
2013- 2022 Archives of Biochemistry and Biophysics

RESEARCH SUPPORT

Active Research Support

1. National Science Foundation (CHE-2431741), (12/01/2024-11/30/2027) Sobrado, P., (PI). Collaborative Project: Exploring the mechanisms, functional diversity, and conformational dynamics of flavin-dependent monooxygenases. Amount: $572,018.

2. National Institute of Food and Agriculture (2022-67013-37047) (06/2022-06/2026) Jelesko, J (61% PI) Sobrado, P., (39% Co-PI). Characterization of the Last Metabolic Step in Poison Ivy Urushiol Biosynthesis. Amount: $649,000.

3. National Science Foundation (CHE-2106188), (07/2021-06/2025-NCE) Tanko, J (55% PI) Sobrado, P., (45% Co-PI). Proton coupled electron transfer and the mechanism of MAO catalysis. Amount: $525,663.

4. National Science Foundation (CHE-2003658), (07/2020-06/2025-NCE) Sobrado, P., (PI). Collaborative Project: Structure and Function of Flavin-Dependent N-Monooxygenases. Amount: $402,000.

Previous Research Support

1. USDA (08/2019-07/2023- NCE) (Inzana, T (PI), Sobrado, P (10%) (Co-PI)). Further Characterization and Resolution of Polymicrobial Biofilms in Bovine Respiratory Disease. $500,000.

2. National Institutes of Health (NIGMS-R01GM094469), (05/2018-04/2022) Sobrado, P. & Tanner, JJ, (MPI). Mechanistic and Structural Studies of Eukaryotic UDP-Galactopyranose Mutases. Amount: $557,456.

3. National Science Foundation (CHE-1506206), (2015-2019) Sobrado, P., (PI). Noncanonical Reactions Catalyzed by Atypical Flavoenzymes. Amount: $480,000.

4. National Science Foundation (MCB-161038), (2016-2019) Sobrado (Co-PI (50%). Modeling the Regulatory Network if Inositol Phosphate Signaling in Plants". Amount: $186,809

5. National Institutes of Health (NIGMS-R01GM094469), (2010-2017- no-cost extension) Sobrado, P., (PI). Mechanistic and Structural Studies of Eukaryotic UDP-Galactopyranose Mutases. Amount: $1,444,412.

6. National Science Foundation (MCB- 1021384), (2010-2017- no-cost extension) Sobrado, P., (PI). Mechanistic and Structural Studies of N-hydroxylating Flavin-Dependent Enzymes. Amount: $1,113,000.

7. Elanco Animal Health. "Biochemical Characterization of Alkaline Phosphatases" (2017-2018) Sobrado, P (PI). Amount: $ 151,299

8. Biodesign and Bioprocessing Research Center, Virginia Tech (2011-2013) Sobrado, P., (PI). Engineering of Flavin Dependent Monooxygenases. Amount $45,000.

9. National Institutes of Health (NIAID), (2010-2012) Sobrado, P., (Co-PI). A Drug Discovery Consortium for Chagas' Disease. Amount: $2,000,000. (Co-PI Portion $250,000).

10. United Soybean Board, (2011-2012) Sobrado, P., (Co-PI). Enzymatic Determination of Digestible Lysine. Amount $ 99,965.

11. Jeffress Fund, (2008-2011) Sobrado, P., (PI). Experimental and Computational Approaches to Identify Selective Inhibitors of Casein Kinase 1 from *Trypanosoma cruzi*. Amount: $40,000.

12. Virginia Academy of Sciences (2010) Sobrado, P., (PI). Biosynthesis of Siderophores. Amount: $10,000.

13. Petroleum Research Fund, (2008-2010) Sobrado, P., (PI) Studies on Group 5 Diiron Monooxygenases: Insight into the Mechanism of Regulation of the Diiron Center. Amount: $50,000.

14. Oak Ridge Associated Universities, (2009-2010) Sobrado, P., (PI). Biochemical and Structural Studies of Flavin-Dependent Siderophore Hydroxylating Enzymes. Amount: $10,000.

15. Fralin Life Science Institute-Virginia Biotechnology Institute, (2009-2010) Sobrado, P., (Co-PI). Brucella Siderophore Biosynthesis. Amount: $7,500.

PATENTS/DISCLOSURES

1. Sobrado, P., Del Campo, J.S., Vogelaar, N., Growth suppression of siderophore-producing pathogens by by small molecule inhibitions of flavin dependent monooxygenases. IP disclosure VTIP17-078

2. Sobrado, P., Jun, Q., High-throughput Assay for the Identification of Inhibitors Against Eukaryotic UDP-galactopyranose Mutases. U.S. Patent Application No.: 61/406,604. 2011.

3. Sobrado, P., Expression System for the Production of Functional Bacterial and Fungal Flavin-Dependent N-hydroxylating Enzymes. U.S. Patent Application No.: 61/363,419. 2010.

4. Fox, B., and Sobrado, P. Expression System for Functional Membrane Polypeptides.US 8088601 B2.

5. Fox, B., Sobrado, P., and Chang, Y., Expression System for Mammalian and Mycobacterium Desaturases. WO/2008/028146.

PUBLICATIONS (Total = 96 Citations: 2672 h-index: 31 i10-index= 62)

1. Sobrado, P., Daubner, S.C. and Fitzpatrick, P.F. (2001) Probing the Relative Timing of Hydrogen Abstraction in the Flavocytochrome b_2 Reaction with Primary and Solvent Deuterium Isotope Effects and Mutant Enzymes. Biochemistry. 40. 994-1001.
2. Sobrado, P., Sura, G. and Fitzpatrick, P.F. (2002) Identification of Catalytic Residues in Tryptophan 2-Monooxygenase a Homologue of L-Amino Acid Oxidase. In Flavins and Flavoproteins (Chapman, S., Scrutton, N., Perham, R., eds.) 369-374.
3. Sobrado, P., and Fitzpatrick P. F. (2002) Analysis of the Roles of Amino Acid Residues in the Flavoprotein Tryptophan 2-Monooxygenase Modified by 2-Oxo-3-pentynoate: Characterization of His338, Cys339 and C511 Mutant Enzymes. Arch. Biochem. Biophys. 402. 24-30.
4. Sobrado, P., and Fitzpatrick, P.F. (2003) Identification of Tyr413 as an Active Site Residue in the Flavoprotein Tryptophan 2-Monooxygenase and Analysis of Its Contribution to Catalysis. Biochemistry .42. 13826-13832.
5. Sobrado, P., and Fitzpatrick, P.F. (2003) Analysis of the Role of the Active Site Residue Arg98 in the Flavoprotein Tryptophan 2-Monooxygenase, a Member of the L-Amino Oxidase Family. Biochemistry. 42. 13833-13838.
6. Sobrado, P., and Fitzpatrick, P.F. (2003) Solvent and Primary Deuterium Isotope Effects Show that Lactate CH and OH Bond Cleavage Are Concerted in Y254F Flavocytochrome b_2, Consistent With a Hydride Transfer Mechanism. Biochemistry. 42.15208-15214. (Selected as Hot Article)
7. Sobrado, P. (2004) Postdoctoral training in South America: Opportunities in Chile. Electronic Journal of Biotechnology [on line]. Vol. 7. No. 3.
8. Sobrado, P., Jedliki, A., Bustos, V.H., Allende, C. C. and Allende, E.J. (2005) The Basic Region of Residues 228-231 of Protein Kinase CK1 is Involved in its Interaction with Axin: Binding to axin does not affect kinase activity. J. Cell. Biochem. 94. 217-224. (Fast Track)
9. Sobrado,P., Kyle, K., Kaul, S., Marwah, A., Arabshahi, I., Turco, M. and Fox, B.G. (2006) Identification of the Binding Region of the [2Fe-2S] Ferredoxin in Stearoyl Acyl Carrier Protein Desaturase: Insight in to the Catalytic Complex and Mechanism of Action. Biochemistry.45.4848-4858.
10. LeBlanc-Straceski, J., Sobrado, P., Ricketts, S., Donoghue, J., and Morgan, K. (2006) Screening of lambda phage libraries by the lift pool method. Electronic Journal of Biotechnology [on line]. Vol. 9. No. 4.
11. Tsai, C-L., Gokulan, K., Sobrado, P., Sacchettini, J.C. and Fitzpatrick, F.P. (2007) Mechanistic and Structural Studies of H373Q Flavocytochrome b_2. Biochemistry.46.7844-7851.
12. Sobrado, P., Gorem, M.A., James, D., Amundson, C.K., and Fox, B.G. (2008) A Protein Structure Initiative Approach to Expression, Purification, and In situ Delivery of Human Cytochrome b5 to Membrane Vesicles. Protein Expr. Purif. 2. 229-41.

13. Sobrado, P. (2008) Functional Expression and Purification of UDP-Galactopyranose Mutase from Trypanosoma cruzi. In Flavins and Flavoproteins (Frago, S., Gomez-Moreno, C, Medina, M. eds.) 509-513.
14. LeBlanc-Straceski, J., Sokac, A., Bement, W., Sobrado, P., and Lemoine, L., (2009) Developmental Expression of Xenopus Myosin 1d (XlMyo1d) and Identification of a Myo1d tail Homology that Overlaps TH1. Develop. Growth Differ. 51. 443-51.
15. Oppenheimer, M., Pierce, S.B., Crowford, A.J., Ray, K., Helm, R., and Sobrado, P. (2010) Recombinant Expression, Purification, and Characterization of ThmD, the Oxidoreductase Component of Tetrahydrofuran Monooxygenase. Arch. Biochem. Biophys. 496.123-31.
16. Oppenheimer, M, Poulin MB, Lowary TL, Helm RF, and Sobrado P. (2010) Characterization of UDP-Galactopyranose Mutase From Aspergillus fumigatus. Arch. Biochem. Biophys. 502. 31–38.
17. Chocklett, W.S, and Sobrado, P. (2010) Aspergillus fumigatus SidA is a Highly Specific Ornithine Hydroxylase with Bound Flavin Cofactor. Biochemistry. 49. 6777-83.
18. Sobrado, P., (2010) Teaching principles of Enzyme Structure, Evolution, and Catalysis Using Bioinformatics. KMB Journal of Science Education. 1. 7-12.
19. Oppenheimer, M., Valenciano, A.L., and Sobrado, P. (2011) Characterization of Leishmania major Virulence Factor UDP-Galactopyranose Mutase. Biophys. Biochem. Res. Comm. 407. 552-6.
20. Oppenheimer, M., Valenciano, A.L., and Sobrado, P. (2011) Biosynthesis of Galactofuranose in kinetoplastids: Novel Therapeutics Targets for Treating Leishmaniasis and Chagas' Disease. Enzyme Research. vol. 2011, Article ID 415976, 13 pages. Review
21. Qi, J., Oppenheimer, M., and Sobrado, P. (2011) Fluorescence Polarization Binding Assay for Aspergillus fumigatus Virulence factor UDP-Galactopyranose Mutase. Enzyme Research. vol. 2011, Article ID 513905, 9 pages.
22. Robinson, R., and Sobrado, P. (2011) Substrate Binding Modulates the Activity of Mycobacterium smegmatis G (MbsG), a Flavin-Dependent Monooxygenase Involved in the Biosynthesis of Hydroxamate-Containing Siderophores. Biochemistry. 50. 8489-96.
23. Dhatwalia, R., Singh, H., Oppenheimer, M., Karr, D.B., Nix, J.C., and Sobrado, P., and Tanner, J.J., (2012) Crystal structures and small-angle X-ray scattering analysis of UDP-galactopyranose mutase from the pathogenic fungus Aspergillus fumigatus. J. Biol. Chem. 286. 9041-51.
24. Oppenheimer, M., Valenciano, A.L., Kizjakina, K., Qi, J., and Sobrado, P., (2012) Chemical Mechanism of UDP-Galactopyranose Mutase from Trypanosoma cruzi: a Potential Drug Target Against Chagas' Disease, PLoS ONE. 7(3) e32918.
25. Romero, E., Robinson, R., and Sobrado, P., (2012) Monitoring the Reductive and Oxidative Half-Reactions of a Flavin Dependent Monooxygenase Using Stopped-flow Spectrophotometer. JoVe. 61.
26. Qi, J., Kizjakina, K., Robinson, R., Tolani, K., and Sobrado, P. (2012) A Fluorescence Polarization Binding Assay to Identify Inhibitors of Flavin-Dependent Monooxygenases. Analytical Biochemistry. 425. 80-7.
27. Romero, E., Fedkenheuer, M., Chocklett, S.W., Qi, J., Oppenheimer, M., and Sobrado, P. (2012). Dual role of NADP(H) in the reaction of a flavin dependent N-hydroxylating monooxygenase. Biochim. Biophys. Acta. 6. 850-7.
28. Dhatwalia, R., Singh, H., Oppenheimer, M., Sobrado, P., and Tanner, J.J. (2012) Crystal Structures of Trypanosoma cruzi UDP-Galactopyranose Mutase Implicate Flexibility of the Histidine Loop in Enzyme Activation. Biochemistry. 51. 4968-79.
29. Franceschini S, Fedkenheuer M, Vogelaar NJ, Robinson HH, Sobrado P., and Mattevi, A. (2012) Structural insight into the mechanism of oxygen activation and substrate selectivity of flavin-dependent N-hydroxylating monooxygenases. Biochemistry. 51.7043-5. Rapid Report
30. Sobrado, P., Noncanonical reactions of flavoenzymes. (2012) Int. J. Mol. Sci. 13. 14219-14242. Review
31. Dhatwalia, R., Singh, H., Solano, L.M., Oppenheimer, M., Robinson, R., Ellerbrock, J.E., Sobrado, P., and Tanner, J.J. (2012) Identification of the NAD(P)H Binding Site of Eukaryotic UDP-Galactopyranose Mutase. J. Am. Chem. Soc. 134. 18132-8. (recommended by Faculty of 1000)
32. Han, A., Robinson, R., Badieyan, S., Ellerbrock, J., and Sobrado, P. (2013) Tryptophan-47 in the active site of Methylophaga sp. Strain SK1 flavin monooxygenase is important for hydride transfer. Arch. Biochem. Biophys. 532. 46-53.
33. Kizjakina, K., Tanner, J.J., and Sobrado, P. (2013). Targeting UDP-galactopyranose Mutases from Eukaryotic Human Pathogen. Current Pharmaceutical Design. 19. 2561-73. Review

34. Robinson, R., and Sobrado, P. (2013) Flavin-Dependent Monooxygenases in Siderophore Biosynthesis. In Flavin and Flavoprotein Handbook. De Gruytler. (Hille, Miller, Palfey Eds). pp. 29-50. Review
35. Badieyan, S., and Sobrado, P. (2013) Inhibition of siderophore biosynthesis by targeting A. fumigatus ornithine hydroxylase: A structure-based virtual screening study. In Microbial Pathogens and Strategies to Combat Them: Science, Technology and Education. Mendez-Vilas, A., Ed. Formatex Research Center. Badajoz, Spain.430-438.
36. Boechi, L., de Oliveira, C.A., da Fonseca, I., Kizjakina, K., Sobrado, P., Tanner, J.J., and McCammon J.A, (2013) Substrate-dependent dynamics of UDP-Galactopyranose Mutase: implications for drug design. Protein Science. 11. 1490-501.
37. Sobrado, P. (2013) Flavin-Dependent N-Hydroxylating monooxygenases in Bacterial and Fungi Siderophore Biosynthesis. In Flavins and Flavoproteins (Miller, S., Hille, R., Palfey, B., Eds). 265-276.Raleigh, NC: Lulu.
38. Oppenheimer, M., Valenciano, A.L., Qi, J., and Sobrado, P. (2013) Eukaryotic UDP-Galactopyranose Mutases are Bi-functional Enzymes: Insights into a Unique Non-redox Reaction. In Flavins and Flavoproteins (Miller, S., Hille, R., Palfey, B., Eds). 67-73. Raleigh, NC: Lulu.
39. Romero, E., Avila, D., and Sobrado, P. (2013) Effect of pH on the Reductive and Oxidative Half-Reactions of Aspergillus fumigatus Siderophore A. In Flavins and Flavoproteins (Miller, S., Hille, R., Palfey, B., Eds). 289-294.Raleigh, NC: Lulu.
40. Da Fonseca, I., Kizjakina, K., and Sobrado, P. (2013). UDP-galactopyranose mutases from Leishmania species that cause visceral and cutaneous leishmaniasis. Arch. Biochem. Biophys. 538. 103-10.
41. Shirey, C., Badeyan, S., and Sobrado, P. (2013) Role of S257 in the sliding mechanism of NADP(H) in the reaction catalyzed by A. fumigatus flavin-dependent ornithine N^5- monooxygenase SidA. J. Biol. Chem. 288:32440-8.
42. Komachi, Y., Hatakeyama, S., Motomatsu, H., Futagami, T., Kizjakina, K., and Sobrado, P., Ekino, K., Takegawa, K., Goto, M., Nomura, Y., Oka, T. (2013) gfsA encodes a novel galactofuranosylatransferase involved in biosynthesis of galactofuranose antigen of O-glycan in Aspergillus nidulans and A. fumigatus . Molecular Microbiology. 90. 1054-73.
43. Robinson, R., Basieyan, S., and Sobrado, P. (2013) C4a-hydroperoxyflavin formation in N-hydroxylating flavin monooxygenases is mediates by the 2'-OH of the nicotinamide ribose of $NADP^+$. Biochemistry. 52. 9089-9091. Rapid Report
44. Tanner, J., Boechi, L., McCammon, J.A., and Sobrado, P. (2014) Structure, Mechanism, and Dynamics of UDP-Galactopyranose Mutase. Arch. Biochem. Biophys. 544. 128-141. Review. Selected for the Cover
45. Robinson, R., Franceschini, S., Fedkenheuer, M., Rodriguez, P., Ellerbrock, P., Romero, E., Echandi, M.P., Martin del Campo, J., and Sobrado, P. (2014) Arg279 is the key regulator of coenzyme selectivity in the flavin-dependent ornithine monooxygenase SidA. Biochim. Biophys. Acta. 1844. 778-784.
46. Robinson, R., Rodriguez, P., and Sobrado, P. (2014) Mechanistics studies on the flavin-dependent N^6-lysine monooxygenase MbsG reveal an unusual control for catalysis. Arch. Biochem. Biophys. 550-551, 58-66.
47. Da Fonseca, I., Qureshi, I.A., Mehra-Chaudharay, R., Kizjakina, K., Tanner, J.J., and Sobrado, P. (2014) Contributions of Unique Active Site Residues of Eukaryotic UDP-Galactopyranose Mutases to Substrate Recognition and Active Site Dynamics. Biochemistry. 53, 7794-7804.
48. Sohrabi, R., Huh, JH, Badieyan, S., Harinantenaina, L., Kingston DGI, Kliebensten, D., and Sobrado, P., and Tholl, D.,(2015) In Planta Variation of Volatile Biosynthesis: An alternative Biosynthetic Route to the Formation of the Pathogen-Induced Volatile Homoterpene DMNT via Triterpene Degradation in Arabidopsis Roots, Plant Cell, 27, 874-90.
49. Badieyan, S, Bach, R., and Sobrado, P. (2015) Mechanism of N-Hydroxylation Catalyzed by Flavin-dependent Monooxygenases . J. Org. Chem. 80, 2139-47.
50. Guo S, Liang Y, Murphy SF, Huang A, Shen H, Kelly DF, Sobrado P, and Sheng, Z. (2015) A rapid and high content assay that measures cyto-ID-stained autophagic compartments and estimates autophagy flux with potential clinical applications. Autophagy. 11, 560-72.
51. Binda, C., Robinson, R., Martin del Campo, J.S., Keul, N., Rodriguez, P., Robinson, H.H., Mattevi, A., and Sobrado, P. (2015) An unprecedented NADPH-domain conformation in Lysine Monooxygenase NbtG provides insights into uncoupling of oxygen consumption from substrate hydroxylation. J. Biol. Chem. 290:12676-88.
52. Bai, Y., McCoy,J., Levin,E., and Sobrado, P., Rajashankar, K., Fox, B.G., and Zhang, M. (2015) X-ray Structure of Mammalian Stearoyl-CoA desaturase. Nature.524:252-6.

53. Robinson, R, Qureshi, I.A., Klancher, C.A., Rodriguez, P.J., Tanner JJ, and Sobrado P. (2015) Contribution to catalysis of ornithine binding residues in ornithine N5-monooxygenase. Arch Biochem Biophys. 585:25-31.
54. Mehra-Chaudhary R, Dai Y, Sobrado P., andTanner JJ. (2016) In Crystallo Capture of a Covalent Intermediate in the UDP-Galactopyranose Mutase Reaction. Biochemistry. 55:833-6.
55. Abdelwahab, H., Robinson, R., Rodriguez, P., Adly, C., El-Sohaimy, S., and Sobrado, P. (2016) Identification of structural determinants of NAD(P)H selectivity and lysine binding in lysine N6-mmonooxygenase. Arch. Biochem. Biophys. 55: 833-6.
56. Abdelwahab, H., Martin Del Campo, JS., Dai, Y., Adly, C., El-Sohaimy, S., and Sobrado, P. (2016) Mechanism of Rifampicin inactivation in Nocardia farcinica. PloS One. 11(10): e0162578.
57. Liu, LK., Abdelwahab, H., Martin Del Campo, JS., Mehra-Chaudhary, R., and Sobrado, P., Tanner, JJ. The Structure of the Antibiotic Deactivating, N-hydroxylating Rifampicin Monooxygenase (2016) J. Biol. Chem. 291: 21553-21562.
58. Martin Del Campo, J.S., Vogelaar, N., Tolani, K., Kizjakina, K., Harich, K., and Sobrado, P. (2016) Inhibition of the flavin-dependent monooxygenase Siderophore A (SidA) blocks siderophore biosynthesis and Aspergillus fumigatus growth. ACS Chem. Biol. 11: 3035-3042
59. Sobrado, P., and Gadda, G., Introduction to flavoproteins: Beyond the classical paradigms.(2017) Arch. Biochem. Biophys. 632:1-3.
60. Sobrado, P., and Tanner, J.J. (2017) Multiple functionalities of reduced flavin in the non-redox reaction catalyzed by UDP-galactopyranose mutase. Arch. Biochem. Biophys. 632:59-65.
61. Webb, B., Compton, K., Martin Del Campo, J.S., Taylor, D., and Sobrado, P., Scharf, B.E. (2017) Sinorhizobium meliloti chemotaxis to multiple amino acids is mediated by chemoreceptor McpU. Mol. Plat. Microbe. Interact. 10: 770-777.
62. Martin Del Campo, J.S., M. Eckshtain-Levi, N. Vogelaar, and Sobrado, P (2017) Identification of Aspergillus fumigatus UDP-galactopyranose mutase inhibitors. Sci Rep. 7:10836.
63. Martin Del Campo, J.S., M. Eckshtain-Levi, and Sobrado, P. (2017) Identification of eukaryotics UDP-galactopyranose mutase inhibitors using the ThermoFAD assay. Biochem. Biopys. Res. Cummun. 493:58-63.
64. Sobrado, P., and Gadda, G. (2017) Introduction to flavoproteins: Beyond the classical paradigms. Arch. Biochem. Biophys. 632:1-3
65. Bufkin, K., and Sobrado, P. (2017) Characterization of the Ornithine Hydroxylation Step in Albachelin Biosynthesis. Molecules 22:1652.
66. Dai, Y., Kizjakina, K., Campbell, A.C., Korasick. D.A., Tanner, J.J, and Sobrado, P. (2018) Flavin-N5 Covalent Intermediate in the Non-redox Dehalogenation Reaction Catalyzed by an Atypical Flavoenzyme. ChemBioChem. 19:53-57.
67. Li-Kai, L., Dai, Y., Abdelwahad, H., and Sobrado, P., Tanner, J.J. (2018) Structural evidence for rifampicin monooxygenase inactivating rifampicin by cleaving its ansa-bridge. Biochemistry. 57:2065-68.
68. Gadda, G., and Sobrado, P. (2018) Kinetic Solvent Viscosity Effects as Probes to Study the Mechanisms Enzyme Action. Biochemistry. Biochemistry. 57:3445-34453.
69. Pierdominicci-Sotteli, G., Cossio-Perez, R., Da Fonseca, L, Kizjakina, K., Tanner, J.J., and Sobrado, P. (2018) Steric Control of the Rate Limiting-Step of UDP-Galactopyranose Mutase. Biochemistry. 57:3713-3721
70. Dai, Y., Valentino, H., and Sobrado, P. (2018) Evidence for Formation of a Radical-Mediated Flavin-N5 Covalent Intermediate. ChemBioChem. 54:3713-3721.
71. Mehnert, M., Heine, T., Sobrado, P., Tischler, D. (2018) Identification of a gene cluster involved in desferrioxamine biosynthesis in Gordonia rubripertincta and Pimelobacter simplex. In Exploring Microorganism: Recent Advancements in Applied Microbiology (Mendez-Vilas, A. Ed) 31-34. Brown Walker Press: Irvine, CA, USA, 2018; pp. 31–34.
72. Robinson, R., Klancher, C., Rodriguez, P., and Sobrado, P. (2019) Flavin oxidation in flavin dependent N-monooxygenase. Protein Science, 1:90-99.
73. Valentino, H., and Sobrado, P.(2019) Performing anaerobic stopped-flow spectrophotometry inside of an anaerobic chamber. Methods Enzymol. 2019;620:51-88.
74. Cossio-Pérez R., Pierdominici-Sottile G, Sobrado, P., and Palma J. (2019) Molecular Dynamics Simulations of Substrate Release from Trypanosoma cruzi UDP-Galactopyranose Mutase. J Chem Inf Model. Feb 25;59(2):809-817.

75. Hofmann M., Martin Del Campo, J.S., Sobrado, P, Tischler D. (2020) Biosynthesis of desferrioxamine siderophores initiated by decarboxylases: A functional investigation of two lysine/ornithine-decarboxylases from Gordonia rubripertincta CWB2 and Pimelobacter simplex 3E. Arch. Biochem. Biophys. 689:108429
76. Valentino H., Campbell, A.C., Schuermann, J.P., Sultana, N, Nam H.G., LeBlanc, S, Tanner, J.J., Sobrado P. (2020) Structure and Function of a Flavin-Dependent S-monooxygenase From Garlic (Allium sativum). J. Biol. Chem. 295:13239-13249. doi: 10.1074/jbc.RA120.014484 (selected Best of 2020 in Enzymology)
77. Campbell A.C., Stiers K.M., Martin Del Campo, J.S., Mehra-Chaudhary, R., Sobrado P., Tanner J.J. (2020) Trapping conformational states of a flavin-dependent N-monooxygenase in crystallo reveals protein and flavin dynamics. J. Biol. Chem. 295:13239-13249. doi: 10.1074/jbc.RA120.014750
78. Campbell, A.C., Robinson, R., Mena-Aguilar, D., Sobrado, P., Tanner, J.J. (2020) Structural determinants of flavin dynamics in a class B monooxygenase. Biochemistry. 59:4609-4616. doi: 10.1021/acs.biochem.0c00783
79. Li, H., Forson, B., Eckshtain-Levi, M., Valentino, H., Martin Del Campo, J., Tanner, J.J., Sobrado, P. (2020) Biochemical Characterization of the Two-Component Flavin-Dependent Monooxygenase involved in Valanimycin Biosynthesis. Biochemistry, doi: 10.1021/acs.biochem.0c00679
80. Sobrado, P. (2021) Role of reduced flavin in dehalogenation reactions. Arch. Biochem. Biophys. 699:108765. doi: 10.1016/j.abb.2020.108696
81. Dye, K.J., Vogelaar, N.J., Sobrado, P., Yang, Z. (2021) High-throughput screen for inhibitors of the Type IV Pilus Assembly ATPase PiB. 6: e00129-2. doi: 10.1128/mSphere.00129-21
82. Reis, R., Li, H., Johnson, M., Sobrado, P. Frontier in flavin-dependent monooxygenases. Arch. Biochem. Biophys. 699:108765. doi: 10.1016/j.abb.2021.108765
83. Valentino, H., Korasick, A.D., Bohac, T.J., Shapiro, J.A., Wencewicz, A.T., Tanner, J.J., and Sobrado, P. (2021) ACS Omega 6(28):18537-18547. doi: 10.1021/acsomega.1c03047
84. Valentino, H., and Sobrado, P. (2021) Characterization of nitro-forming enzyme involved in fosfazinomycin biosynthesis. Biochemistry. 60:2851-2864. doi: 10.1021/acs.biochem.1c00512
85. Dye, KJ, Vogelaar, NJ, O'Hara, M, Sobrado, P, Santos W, Carlier PR, and Yang Z. (2022) Discovery of Two Inhibitors of the Type IV Pilus Assembly ATPase PilB as Potential Antivirulence Compounds. Microbiol Spectr. Nov 15:e0387722. doi: 10.1128/spectrum.03877-22.
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87. Sobrado, P., and Neira, J.L., (2023) Paul F. Fitzpatrick: A life of editorial duties and elucidating the mechanism of enzyme action. Arch. Biochem. Biophys. 742:109635. doi: 10.1016/j.abb.2023.109635
88. Pierdominici-Sottile, G., Palma, J., Ferrelli, L.M., and Sobrado, P., (2024) The dynamics of the flavin, NADPH, and active sire loops determine the mechanism of activation of class B flavin-dependent monooxygenases. Protein Sciences. 33(4):e4935. Doi: 10.1002/pro.4935.
89. Johnson, S.B., Paasch, K., Shepard, S., and Sobrado, P. (2024) Kinetic Characterization of a Flavin-Dependent Monooxygenase from the Insect Food Crop Pest, Zonocerus variegatus. Arch. Biochem. Biophys. 754:109949. doi: 10.1016/j.abb.2024.109949
90. Johnson, S.B., Li, H., Valentino, H., and Sobrado, P. (2024) Mechanism of Nitrone Formation by a Flavin-Dependent Monooxygenase. Biochemistry. 63:1445-1459. doi: 10.1021/acs.biochem.3c00656
91. Zhu, X., Gong, X., Chen, J., Jiang, L., Liu, Y., Guo, Y., Sobrado, P., and Han, Q. (2024) Molecular and functional identification of tyrosine hydroxylase in the yellow fever mosquito, Aedes aegypti, under review
92. Yu, H., Peng, C., Li, Y., Zhu, X., Huang, Y., Jiang, L., Chen, Z., Sobrado, P., Han, Q. (2025) Identification of a serine protease involved in Spinosad degradation in the yellow fever mosquito, Aedes aegypti. Pesticide Biochemistry and Physiology. Insect Mol. Biol. In press. doi: 10.1111/imb.12990.
93. Johnson, B.S., Valentino, H., and Sobrado, P. (2024) Kinetic Characterization and Identification of Key Active Site Residues of the N-aspartate-L-hydroxylase, CreE. CheBioChem, 25:e202400350. doi: 10.1002/cbic.202400350.
94. Lyons NS, Johnson SB, and Sobrado P. (2024) Methods for biochemical characterization of flavin-dependent N-monooxygenases involved in siderophore biosynthesis.Methods Enzymol.702:247-280. doi: 10.1016/bs.mie.2024.06.014.
95. Kizjakina, K., Dai, Y., and Sobrado, P. (2025) Light regulation of flavin reduction by NAD(P)H: activation of 2-haloacrylate hydratase. Arch. Biochem. Biophys. 764:110285. doi: 10.1016/j.abb.2024.110285.

96. Lyons, N.S., Zalenski, R.A., and Sobrado, P. (2025) Identification of active site residues involved in substrate binding and cofactor specificity in a putrescine N-monooxygenase. Arch. Biochem. Biophys. 771:110519

PUBLISHED ABSTRACTS

1. Sobrado, P., Robinson, R., Britt, K. Flavin Dehydration in a Class B monooxygenase (2021, May) In FASEB JOURNAL (Vol. 35). Rockville Pike, Bethesda, MD 20814-3998 USA.
2. Campbell, A. Mehra-Chaudhary, R., Del Campo, J.S., Sobrado, P., & Tanner, J.J. Trapping conformational states of SidA ornithine hydroxylase in crystallo. Acta. Cryst. (2017) A73. A232.
3. Robinson, R., Rodriguez, P., Keul, N., & Sobrado, P. (2014) Mechanistic studies of a flavin-dependent monooxygenase from Nocardia farcinia. Va. J. Sci. 64 (1&2). 100.
4. Badieyan, S., & Sobrado, P. (2014) Inhibition of siderophore biosynthesis by targeting A. fumigatus ornithine hydroxylase: A structure-based virtual screening study. Va. J. Sci. 64 (1&2). 102.
5. Gringer, A., Da Fonseca, I., & Sobrado, P., (2014) Characterization of a flavin dependent monooxygenase from Cupriavidus taiwanensis. Va. J. Sci. 64 (1&2). 106.
6. Ryan, W.T., Kizjakina, K., Sobrado, P., (2014) Characterization of UDP-arabinopyranose as a substrate of eukaryotic UDP-galactopyranose mutases. Va. J. Sci. 64 (1&2). 106.108.
7. Ellerbrock, J., Han, A., & Sobrado, P. (2013, April). Role of conserved tryptophan 47 in the active site of flavin-monooxygenase from Methylophaga sp. strain sk1. In Abstracts of papers of the American Chemical Society (Vol. 245). 1155 16TH ST, NW, Washington, DC 20036 USA.
8. Da Fonseca, I., Kizjakina, K., & Sobrado, P. (2013, April). Functional expression and characterization of UDP-galactopyranose mutases from Leishmania infantum and Leishmania mexicana. In Abstracts of papers of the American Chemical Society (Vol. 245). 1155 16TH ST, NW, Washington, DC 20036 USA.
9. Shirey, C., & Sobrado, P. (2013, April). Role of S257 in the sliding mechanism of NADP (H) in Aspergillus fumigatus SidA. In Abstracts of papers of the American Chemical Society (Vol. 245). 1155 16TH ST, NW, Washington, DC 20036 USA.
10. Sobrado, P., Briggs, M., Dhatwalia, R., Singh, H., & Tanner, J. J. (2013, April). Structural and mechanistic insight into the mechanism of flavin activation in eukaryotic UDP-galactopyranose mutases. In Abstracts of papers of the American Chemical Society (Vol. 245). 1155 16TH ST, NW, Washington, DC 20036 USA.
11. Robinson, R., & Sobrado, P. (2013, April). pH, primary, and solvent kinetic isotope effects on the reaction catalyzed by lysine N-6-monooxygenase from M. smegmatis. In In Abstracts of papers of the American Chemical Society (Vol. 245). 1155 16TH ST, NW, Washington, DC 20036 USA.
12. Rodriguez, P., Robinson, R., Keul, N., & Sobrado, P. (2013, April). Lys64 is important for substrate binding in the flavoprotein nocobactin G. In Abstracts of papers of the American Chemical Society (Vol. 245). 1155 16TH ST, NW, Washington, DC 20036 USA.
13. Keul, N., Robinson, R., & Sobrado, P. (2013, April). Mechanistic studies on NbtG, a flavin dependent N-6-lysine monooxygenase. In Abstracts of papers of the American Chemical Society (Vol. 245). 1155 16TH ST, NW, Washington, DC 20036 USA.
14. Romero, E., Fedkenheuer, M., & Sobrado, P. (2011, April). Primary and Solvent Kinetic Isotope Effects on Catalysis by Aspergillus fumigatus Ornithine Hydroxylase. In FASEB JOURNAL (Vol. 25). 9650 Rockville Pike, Bethesda, MD 20814-3998 USA.
15. Qi, J., Oppenheimer, M., & Sobrado, P. (2011, April). High throughput assay to identify inhibitors against UDP-galactopyranose mutase from eukaryotic pathogens. In FASEB JOURNAL (Vol. 25). 9650 Rockville Pike, Bethesda, MD 20814-3998 USA.
16. Oppenheimer, M., Valenciano, A. L., & Sobrado, P. (2011, April). Functional expression and characterization of UDP-galactopyranose mutase from Leishmania major. In FASEB JOURNAL (Vol. 25). Rockville Pike, Bethesda, MD 20814-3998 USA.
17. Sobrado, P., & Chocklett, W.S., (2010) Characterization of Recombinant Aspergillus fumigatus SidA: A Flavin-Dependent N-Hydroxylase with Bound Flavin Cofactor. Va. J. Sci. 61(1 & 2): 66.
18. Kannan, S., Sobrado, P., & Bevan, D. (2010) Experimental and Computational Approaches to Identify Selective Inhibitors of Casein Kinase 1 from Trypanosoma cruzi. Va. J. Sci. 61(1 & 2): 38.
19. Oppenheimer, M.L., Blumer, A., Poulin,M., Helm, R.F., Lowary, T.L., & Sobrado, P. (2010) Mechanistic Studies on UDP-Galactopyranose Mutases from Aspergillus fumigatus and Trypanosoma cruzi. FASEB J. 24:513.2.

20. Sobrado, P., Chocklett, W., & Robinson, R. (2010, April). Flavin-dependent N-hydroxylating enzymes from Mycobacterium smegmatis and Aspergillus fumigatus. In FASEB JL (Vol. 24). 9650 Rockville Pike, Bethesda, MD 20814-3998 USA.
21. Robinson, R., Oppenheimer, M., Llanos-Velazquez, J., Chocklett, S.W., & Sobrado, P. (2009) Group 5 Bacterial Multicomponent monooxygeasnes, Va. J. Sci. 60. 2. p81.
22. Oppenheimer, M., & Sobrado, P. (2009) Characterization of Aspergillus fumigatus UDP-Galactopyranose Mutase. Va. J. Sci. 60. 2. p80.
23. LeBlanc-Straceski, J., Bement W., S. Ricketts, Sobrado, P., Morgan, K., Donoghue, J., & Pavao, S. (1999) Expression of a Xenopus homologue of myosin 1myr4 XlMyo1d] detected in embryonic spinal cord by in situ hybridization. Mol. Biol. Cell. 10, 161a

INVITED COLLOQUIA

- BioInnovation and Medical Engineering Conference, June 27th,2025, Missouri S&T, Rolla, MO
- Department of Biology, April 28th,2025, Missouri S&T, Rolla, MO
- Department of Medicinal Chemistry, University of Florida, April 24th, 2024
- BioDiscovery Institute, University of North Texas, Denton, TX, April 18th-19th, 2024.
- Department of Biological Sciences, University of Alabama, LA, March 19th, 2024.
- Department of Chemistry, Missouri University of Science and Technology, March 12th, 2024.
- VT Kids, Fralin Life Science Institute, Blacksburg, VA, February 24th, 2024.
- Department of Chemistry, SUNY-Buffalo, March 17th, 2023.
- Department of Chemistry and Biochemistry, Loyola University-Chicago, IL, February 16, 2023.
- International Flavin Meeting, Graz, Austria, September 5-9, 2021.
- Department of Biology, Middlebury College, Middlebury, VT, February 10, 2021.
- ACS Spring 2021 Annual Meeting, Protein Studies Session, Online, April 12, 2021.
- Department of Biomolecular Sciences, University of Kansas, October, 22, 2019.
- Burnett School of Biomedical Sciences, University of Central Florida, May 10, 2018.
- GRC, Enzymes, Coenzymes, and Metabolic Pathways, Waterville Valley, NH, July 16-21, 2017.
- Department of Biochemistry, University of California-Riverside, April 11, 2017.
- Department of Chemistry and Biochemistry, University of Maryland, College Park, MD, February 14, 2017.
- International Conference on Cofactors (Plenary Lecture), Unazuki, Japan, September 4-8, 2016.
- 7th Southeast Enzyme Conference (Keynote Speaker), Atlanta, GA, April 16, 2016.
- International Conference on Clinical Sciences and Drug Discovery (Plenary Lecture), Baltimore, MD, November 02-04, 2015.
- ACS Southwest /Southeast Regional Meeting (Invited Speaker), Memphis, TN, November 04-07, 2015.
- Division of Medicinal Chemistry and Pharmacognosy, Ohio State University, October 19-21, 2015.
- Laboratory of Computational Biology, NIH, Bethesda, MD, March 19, 2015.
- Department of Chemistry and Biochemistry, University of Toledo, OH, September 15, 2014.
- 4th International Conference on Cofactors, Parma, Italy, August 24-28, 2014.
- Department of Chemistry and Biochemistry, University of North Carolina-Greensboro, NC, January 24, 2014.
- Department of Pharmaceutical and Biomedical Sciences, University of Georgia, Athens, GA, December 5, 2013.
- Department of Chemistry, University of Alabama, Tuscaloosa, AL, April 27, 2014.
- Department of Biochemistry, University of Wisconsin-Madison, WI, March 11, 2013.
- Department of Chemistry, University of Missouri, MO, September 21, 2012.
- ACS Hampton Roads Sections, Old Dominion University, Norfolk, VA, September 15, 2012.
- Virginia Tech Carilion School of Medicine, Roanoke, VA, August 17, 2012.
- Department of Biochemistry, Wake Forest School of Medicine, Salem, NC, March 6, 2012.
- Department of Biology, Costa Rica Institute of Technology, Cartago, Costa Rica, May 14, 2012.
- Department of Pharmacology, University of Costa Rica, San Jose, Costa Rica, May 15, 2012.
- Department of Chemistry and Biochemistry, University of Texas, Arlington, TX, April 27, 2012.

- International Congress of Bioinformatics and Systems Biology, San Jose, Costa Rica, March 28, 2012.
- 17th International Symposium in Flavins and Flavoproteins, Berkeley, CA, July 27th, 2011.
- Gordon Research Conference on Enzymes and Cofactors, Waterville Valley, NH, July 14th, 2011.
- Department of Biochemistry and Molecular Biology, University of Kansas Medical Center, May 13th, 2011.
- Department of Biochemistry and Biophysics, Texas A&M University, College Station, TX, February 19th, 2011.
- Department of Chemistry, University of Richmond, Richmond, VA, February 8th, 2011.
- Department of Chemistry and Biochemistry, University of Wisconsin, Milwaukee, WI, February 4th, 2011.
- Drug Discovery Consortium for Chagas' Disease, Atlanta, GA, November 3rd, 2010.
- Department of Biology, Concord University, September 2nd, 2010.
- 88th Meeting of the Virginia Academy of Sciences, JMU, Harrisonburg, VA, May 20-22, 2010.
- Protein Structure and Function Symposium, Virginia Tech, April 7th, 2010.
- Department of Entomology, Virginia Tech, Blacksburg, VA, March 4th, 2010.
- Department of Chemistry, Radford University, December 4, 2009.
- Department of Biology, West Virginia State University, West Virginia, October 8, 2009.
- Department of Biotechnology, Costa Rica Institute of Technology, San Jose, Costa Rica, October 28, 2009.
- 2nd National Institute of Health Career Symposium, Bethesda, May 19, 2009.
- 3rd Virginia Tech Structural Biology Symposium, Virginia Tech, March 28, 2008.
- Biochemistry Department, Virginia Tech, February 8, 2007.
- Chemistry Department, Purdue University, February 1, 2007.
- Biology Department, Northeastern Illinois University, January 22, 2007.
- Chemistry and Biochemistry Department, Clarkson University, December 11, 2006.
- Section in Molecular and Cellular Biology, UC-Davis, December 4, 2006.
- Chemistry and Biochemistry Department, Clark University, November 15, 2006.
- Advance Enzyme Seminar, invited by W.W. Cleland, UW-Madison, May 4, 2006.
- Institute "Clodomiro Picado Twight", Universidad de Costa Rica, Costa Rica, August 5, 2004.
- Seminario Centro FONDAP de Estudios Moleculares de la Célula. Facultad de Medicina, Universidad de Chile, July 1, 2004.
- Venezuelan Institute for Scientific Research (IVIC), Caracas, Venezuela, May 26, 2004.
- Scientific Center "Man of the Desert", Universidad de Tarapacá, Arica, Chile. November 24, 2003.
- Institute for Biomedical Research, Facultad de Medicina, Universidad de Chile, Santiago, Chile, September 16, 2003.
- Department of Biochemistry, University of Wisconsin, Madison, WI, July 2, 2003.

PROFESSIONAL MEETINGS

- American Society for Biochemistry and Molecular Biology (ASMBM), April 12-15, 2025, Chicago, IL
- NextGen Pathways Symposium 2025, University of Missouri, Kansas City, March 14, 2025
- 44th Midwest Enzyme Chemistry Conference, University of Notre Dame, October 26, 2024.
- Southeast Enzyme Conference, Atlanta, GA, April 27th, 2024.
- American Society for Biochemistry and Molecular Biology (ASMBM), San Antonio, TX, March 22-26, 2024.
- Gordon Research Conference on Enzymes and Cofactors, Waterville Valley, NH, July 16-21, 2023
- 13th Southeast Enzyme Conference, Atlanta, GA, April 22nd, 2023.
- ASBMB National Meeting, Seattle, WA, March 25-28, 2023.
- 12th Southeast Enzyme Conference, Atlanta, GA, April 23rd, 2022.
- 27th Enzyme Mechanisms Conference, Tucson, AZ, January 2-6, 2022.
- Gordon Research Conference on Enzymes and Cofactors, Waterville Valley, NH, July 24-29, 2022
- American Society for Biochemistry and Molecular Biology (ASMBM), Online, April 25-29, 2021.
- ACS National Meeting, Online, April 5-30, 2021.
- Gordon Research Conference on Enzymes and Cofactors, Waterville Valley, NH, July 21-26, 2019
- American Society for Biochemistry and Molecular Biology (ASMBM), Orlando, FL, April 6-10, 2019.

- 26th Enzyme Mechanisms Conference, New Orleans, January 6-9, 2019
- Gordon Research Conference on Enzymes and Cofactors, Waterville Valley, NH, July 22-27, 2018.
- 9th Southeast Enzyme Conference, Atlanta, GA, April 7, 2018.
- Gordon Research Conference on Enzymes and Cofactors, Waterville Valley, NH, July 16-21, 2017.
- 8th Southeast Enzyme Conference, Atlanta, GA, April 8, 2017.
- 19th International Flavin and Flavoproteins Symosium, Groningen, The Netherlands, July 2-6, 2017
- Gordon Research Conference on Enzymes and Cofactors, Waterville Valley, NH, July 24-29, 2016.
- 7th Southeast Enzyme Conference, Atlanta, GA, April 16, 2016.
- The Biochemistry and Chemistry of Biocatalysis: From Understanding to Design, Oulu, Finland, June 12-15, 2016.
- VirginiaBrainRx, Richmond, VA, March 23-24,
- 14th International Conference on the Chemistry of Antibiotics and other Bioactive Compounds, Galveston Texas, TX, October 13-16, 2015.
- Gordon Research Conference on Enzymes and Cofactors, Waterville Valley, NH, July 12-17, 2015.
- 6th Southeast Enzyme Conference, Atlanta, GA, April 11, 2015.
- 18th International Symposium in Flavins and Flavoproteins, Phechaburi,Thailand, July 27-August 1, 2014.
- Gordon Research Conference on Enzymes and Cofactors, Waterville Valley, NH, July 13-18, 2014.
- EMBO Conference "Enzyme Mechanisms biy Biologycal Systems", Manchester, UK, June 1-4, 2014.
- 36th Steenbock Symposium, Madison, WI, May 22-24, 2014.
- 5th Southeast Enzyme Coneference, Atlanta, GA, April 5, 2014.
- 2nd Zing-Enzyme, Coenzymes, & Metabolic Pathways Conference, Cancun, Mexico, November 17-21, 2013.
- 3rd Virginia Tech Symposium on Vector-Borne Disease Research, Virginia Tech, Blacksburg, VA, March 8-9-2013.
- 91st Virginia Academy of Science Meeting, May 22-24, 2013, Blacksburg, VA, 24061.
- 23rd Enzyme Mechanisms Conference, Coronado, CA, January 4-7, 2013.
- Gordon Research Conference on Enzymes and Cofactors, Waterville Valley, NH, July 10-15, 2012.
- 90th Virginia Academy of Science Meeting, Norfolk State University, Norfolk, VA May 23-25, 2012.
- 10th Undergraduate Research Conference, Virginia Tech, Blacksburg, VA, April 19, 2012.
- 3rd Southeast Enzyme Conference, Atlanta, GA, April 14, 2012.
- 2nd Virginia Tech Vector Borne Disease Reseach Symposium, April 9-10, 2012.
- Catalytic Mechanism of Biological Systems, Groningen, The Netherlands, October 7-10, 2012.
- International Congress of Bioinformatics and System Biology, San Jose, Costa Rica, March 28-30, 2012.
- 17th International Symposium in Flavins and Flavoproteins, Berkeley, CA, July 24-29, 2011.
- Gordon Research Conference on Enzymes and Cofactors, Waterville Valley, NH, July 10-15, 2011.
- 89th Virginia Academy of Science Conference, University of Richmond, Richmond, VA, May 25-27, 2011.
- American Society for Biochemistry and Molecular Biology (ASMBM), Washington, DC., April 9-13, 2011.
- 22nd Enzyme Mechanisms Conference, St. Pete's Beach, FL, January 2-6, 2011.
- Mid-Atlantic BioConference, Washington, DC, October 27-29, 2010.
- 1st Southeast Enzyme Conference, Atlanta, GA, April 10, 2010.
- American Society for Biochemistry and Molecular Biology (ASMBM), Anaheim, CA, April 24-28, 2010.
- ACS National Meeting, Washington, DC, August 16-20, 2009.
- 2nd Frontiers at the Interface of Chemistry and Biology, University of Maryland, May 2, 2009.
- Gordon Research Conference on Enzymes, Coenzymes and Metabolic Pathways, Waterville, NH ,July 5-10, 2009.
- 86th Virginia Academy of Science Conference, VCU, Richmond, VA. May 26-28, 2009.
- 2nd Frontiers at the Interface of Chemistry and Biology, University of Maryland, May 2, 2009.
- 2nd International Interdisciplinary Conference on Vitamins, Coenzymes, and Biofactors, Athens, Georgia, October 26-31, 2008.
- 16th Symposium on Flavins and Flavoproteins, Jaca, Spain, June 8-13, 2008.
- 20th Enzyme Mechanism Conference, St. Pete Beach, Florida, January 3-6, 2007.

- 6th Annual Signal Transduction Research Training Symposium, Madison, WI, October 3, 2006.
- XXVI Midwest Enzyme Chemistry Conference, Evanston, Illinois, September 30, 2006.
- 2006 Great Lakes Regional Meeting, American Chemical Society, Milwaukee, WI, May 31-June 1, 2006.
- 5th Annual Signal Transduction Research Training Symposium, Madison, WI, September 29, 2005.
- 12th International Conference on Biological Inorganic Chemistry, Ann Arbor, MI, July 31-August 5, 2005.
- 31st Steenbock Symposium, Madison, WI, May 19-22, 2005.
- Biotechnology and Petroleum, Institute for Advanced Studies, Caracas, Venezuela, May 30- June 4, 2004.
- International Postgraduate Workshop in Endothelial Dysfunction in Vascular Disorders, Valparaiso, Chile, November 2003.
- 29th Steenbock Symposium, Madison, WI, May 29-June 1, 2003.
- 18th Enzyme Mechanism Conference, Galveston Island, TX, January 4-8, 2003.
- Center for Advanced Biomolecular Research (CABR), Biochemistry Department, Camp Allen, Texas, December 2002.
- 14th International Symposium on Flavins and Flavoproteins, St John's College, University
- of Cambridge, UK, July 2002.
- Industry University Chemistry Program, Texas A & M University, Chemistry Department, TX, October 2001.
- Center for Advanced Biomolecular Research (CABR), Biochemistry Department.
- Camp Allen, TX, November 2001.
- Gordon Research Conference on Isotopes in Biological and Chemical Science, Ventura, California, January 2000.
- XV Lost Pines Conference, Science Park-Research Division, Smithville, TX, October 1999.
- Northeast Regional Developmental Biology Conference, Marine Biological Laboratory, Woods Hole, MA, March 1999.
- Northeastern Biological Conference. Colby-Sawyer College, New London, New Hampshire, September, 1996.

RESEARCH PRESENTATIONS MADE BY POSTDOCS, GRADUATE, AND UNDERGRADUATE STUDENTS

Oral presentations
(Bold-lead Author, *Undergraduate Student,**Graduate Student, ***Postdocs)

1. **Noah, L., Sobrado, P. Kinetic Characterization of the Auxin-Producing Flavin-Dependent Monooxygenase YUC10. 13th Southeast Enzyme Conference, Atlanta, GA, April 22nd, 2023
2. **Johnson, S.; Li, H.; **Valentino, H.; Sobrado, P. Biochemical Characterization of OxaD, a Nitrone Forming Flavin-Dependent Monooxygenases. 41st Midwest Enzyme Conference, October 23rd, 2021. Online.
3. **Johnson, S.; Sobrado, P. Kinetic Characterization of Novel N-Monooxygenases, CreE and PcxL, involved in Nitro and Oxime Functional Group Formation. 11th Southeast Enzyme Conference, April 10th, 2021. Online.
4. **Valentino, H., Sobrado, P. I clove you, AsFMO. Characterization of flavin containing S-monooxygenase from Garlic. Smith College, October 7th, 2020.
5. ***Dai, Y.; ***Kisjakina, K.; Tanner, J.; Sobrado, P., New Function of Flavin Dependent Enzymes: The Mechanism of 2-Haloacrylate Hydratase. 93th meeting of the Virginia Academic of Science, Richmond, VA, May 15th - May 17th, 2016.
6. ***Dai, Y.; ***Kisjakina, K.; Tanner, J.; Sobrado, P., New Function of Flavin Dependent Enzymes: the Mechanism of 2-Haloacrylate Hydratase. American Chemistry Society, Annual Meeting, Philadelphia, PA, Aug 20th - Aug 26th, 2016.
7. **Abdelwahab, H., & Sobrado, P. Drug resistance in Nocardia farcinica: Mechanism of rifampicin inactivation. 6th Southeast Enzyme Conference, Atlanta, GA, April 11, 2015.
8. **Robinson, R., *Keul, N., *Rodriguez, P., & Sobrado, P. The flavin-dependent N6-lysine monooxygenase NbtG from Nocardia farcinica hydroxylates both L- and D- lysine. 18th International Symposium on Flavins and Flavoproteins, Phechaburi, Thailand, July 27-August 1, 2014.

9. **Robinson R., *Rodriguez, P., *Keul, N., & Sobrado, P., Mechanistic Studies of a Flavin-Dependent Lysine monooxygenase from Norcardia farcinica. 91st Annual Meeting of the Virginia Academy of Science, Virginia Tech, Blacksburg, VA, May 22-24, 2014.
10. ***Badieyan S., & Sobrado, P. Inhibition of Siderophore Biosynthesis by Targetin A. fumigatus ornithine hydroxylase: A structure-base virtual screening study. 91st Annual Meeting of the Virginia Academy of Science, Virgnia Tech, Blacksburg, VA, May 22-24, 2013.
11. *Ellerbrock, J., **Oppenheimer, M., Dhatwalia, R., Tanner, J.J., & Sobrado , P. Structural ad functional analysis of Trypanosoma cruzi UDP-galactopyranose mutase. 90th Annual Meeting of the Virginia Academy of Science, Norfolk State University, Norfolk, VA, May 23-25, 2012.
12. *Keul, N., **Robinson, R., & Sobrado, P., Expression, Purification, and Preliminary Characterization of Members of the N- hydroxylating Monooxygenase Family. 90th Annual Meeting of the Virginia Academy of Science, Norfolk State University, Norfolk, VA, May 23-25, 2012.
13. *Shirey, C., **Fedkenheuer, M., Franceschini, S., Mattevi, A., & Sobrado, P. Substrate Binding Mechanism of Aspergillus fumigatus Siderophore A. 3rd Southeast Enzyme Conference. Atlanta, GA, April 14, 2012.
14. **Oppenheimer, M., & Sobrado, P., Mechanistic Studies of Eukarytic UDP-Galactopyranose mutases. Virginia Tech, Vector Borne Group, Minisymposium, Blacksburg, VA, 2011.
15. **Oppenheimer, M., & Sobrado, P., Mechanism of Action of UDP-galactopyranose mutase from Trypanosoma cruzi. 89th Annual Meeting of the Virginia Academy of Science, University of Richmond, Richmond, VA, May 25 – 27, 2011.
16. ***Qi., J., & Sobrado, P. High-Throughput Assay to Identify Inhibitors Against UDP-Galactopyranose Mutase From Eukaryotic Pathogens., 89th Annual Meeting of the Virginia Academy of Science, University of Richmond, Richmond, VA, May 25-27, 2011.
17. ***Qi, J., & Sobrado, P. High-throughput assay to identify inhibitors against UDP-galactopyranose mutase from eukaryotic pathogens. ACC Interdisciplinary Forum for Discovery in Life Sciences, Virginia Tech, Blacksburg, VA, October 3-6, 2010.
18. *Moliva, J., &Sobrado, P. Probing the C-H bond cleavage step catalyzed by the enzyme siderophore hydroxylase A from Aspergillus fumigatus. REU- Research Day, Virginia Bioinformatics Institute, Blacksburg, VA, June 14, 2010.
19. **Oppenheimer, M., & Sobrado, P. Identification of active site residues in Trypanosoma cruzi UDP-galactopyranose mutase, 1st Southeast Enzyme Conference Atlanta, GA, April 10, 2010.
20. **Oppenheimer, M., & Sobrado, P. Examination of two eukaryotic UDP-galactopyranose mutases. 26th Annual Graduate Student Assembly Research Symposium, Virginia Tech, Blacksburg, VA, March 24, 2010.
21. *Blumer, A., & Sobrado, P. Structural and Functional Studies of Trypanosoma cruzi UDP-Galactopyranose Mutase, 8th Annual undergraduate and prospective graduate student conference. March 12, 2010.
22. *Khanna, S., & Sobrado, P. Experiment and Computational Approaches to Identify Selective Inhibitors of Casein Kinase 1 from Trypanosoma cruzi. 88th Annual Meeting of the Virginia Academy of Science, James Madison University, Fredericksburg, VA, May 21, 2010.
23. **Oppenheimer, M., & Sobrado, P., Characterization of A. fumigatus UDP-galactopyranose mutase. 86th Annual Meeting of the Virginia Academy of Science, Virginia Commonwealth University, Richmond, VA, May 26-28, 2009.
24. **Chocklett, W.S., & Sobrado, P., Hydroxamate formation in siderophore biosynthesis. 86th Annual Meeting of the Virginia Academy of Science, Virginia Commonwealth University, Richmond, VA, May, 26-28, 2009. (awarded best presentation prize)
25. *Robinson, R., & Sobrado, P. Characterization of Casein kinases 1 from Trypanosoma cruzi. Fralin Life Science Institute 2009 SURF Symposium, Virginia Tech, Blacksburg, VA, August 6, 2009.
26. *Jordan, R., Sobrado, P. Structural studies on ThmD: the oxidoreductase component of tetrahydrofuran monooxygenase. MAOP Summer Symposium. Virginia Tech, Blacksburg, VA, July 28, 2009.
27. *MacFarlane, A., & Sobrado, P. Expression and characterization of casein kinase 1 from Trypanosoma cruzi. MAOP Summer Symposium. Virginia Tech, Blacksburg, VA. July 28th, 2009.
28. *Robinson, R., & Sobrado, P. Group 5 bacterial multicomponent monooxygenases, 7th Annual Virginia Tech Undergraduate Research and Prospective Graduate Student Conference, Virginia Tech, April 7th, 2009.

<u>Posters presented at professional meetings</u>

(Bold-Lead author, *Undergraduate Student,**Graduate Student, ***Postdocs)

1. *Ballagh, K., Sobrado, P. Engineering flavin-dependent enzymes for structural studies. Virginia Academy of Science Annual Meeting, Fredericksburg, VA, May 16-17, 2024.
2. *Nimmo, A., **Lyons, N., Sobrado, P., Identification of active site residues in YUC10 from Arabidopsis thaliana. MAOP Summer Research, Virginia Tech, Blacksburg, VA, August 3, 2023
3. **Johnson, S., *Paasch, K., Sobrado, P. Biochemical Characterization of a Flavin-Dependent Monooxygenase Involved in Plant Alkaloid Resistance, ZvFMO. 12th Southeast Enzyme Conference, Atlanta, GA, April 23rd, 2022.
4. **Johnson, S., Sobrado, P. Structural and Kinetic Characterization of a Nitro-Forming Flavin Dependent Monooxygenase, CreE. 27th Enzyme Mechanisms Conference, Tucson, AZ, January 2-6, 2022.
5. Lyons, N., Sobrado, P., Kinetic and Biochemical Characterization of the Arabidopsis thaliana Flavin Monooxygenase YUC10. 12th Southeast Enzyme Conference, Atlanta, GA, April 23rd, 2022.
6. *Johnson, M., **Johnson, S., Sobrado, P., Characterization of a Two-Component Flavin Monooxygenase (Sky39/40) from Streptomyces sp. Acta 2897. 12th Southeast Enzyme Conference, Atlanta, GA, April 23rd, 2022.
7. **Lyons, N.; Yang, J.; Wencewiz, T.; and Sobrado, P.; Kinetic and Biochemical Characterization of the Putrescine Hydroxylase FbsI from Acinetobacter baumannii 41st Midwest Enzyme Conference, October 23rd, 2021. Online.
8. **Britt, K.; **Robinson, R., **Johnson, S.; and Sobrado, P. Characterization of Ornithine Monooxygenase, SdiA, R144K mutant.41st Midwest Enzyme Conference, October 23rd, 2021. Online.
9. **Valentino, H., Korasick, D.A., Bohac, T.J, Shapiro, J.S., Wencewicz, T., Tanner, J.J., and Sobrado, P. Structural and Biochemical Characterization of the Flavin-Dependent Siderophore-Interacting Protein from Acinetobacter baumannii. 11th Southeast Enzyme Conference, Online, April 11th, 2021
10. **Johnson, S., and Sobrado, P. Kinetic Characterization of Novel N-Monooxygenases, CreE and PcXL, involved in Nitro and Oxime Functional Group Formation. 11th Southeast Enzyme Conference, Online, April 10th, 2021.
11. **Mena, D., Campbell, A., Tanner, J.J., and Sobrado, P. Biochemical and crystallization studies of diamine monooxygenase. VTCDD Research Day, Blacksburg, VA. November, 2, 2017.
12. **Valentino, H., and Sobrado, P. Characterization of an N-hydroxylating monooxygenase (FzmM) involved in fosfazinomycin biosynthesis. VTCDD Research Day, Blacksburg, VA. November, 2, 2017.
13. **Mehnert, M., ***Martin Del Campo, J. S., and Sobrado, P., D. Tischler. Characterization of two decarboxylases involved in biosynthesis of deferrioxamine siderophores. BioMicroWorld Conference, Madrid, Spain, October 15-20, 2017
14. **Bufkin, K., and Sobrado,P. Hydroxamate formation in the siderophore albachelin. 8th Southeast Enzyme Conference, Atlanta, GA, April, 8, 2017.
15. **Nam, H., and Sobrado, P. Enzymatic studies on AsFMO1, a flavin dependent monooxygenase found in garlic aliicin biosynthetic pathway. 8th Southeast Enzyme Conference, Atlanta, GA, April, 8, 2017.
16. ***Eckshtain-Levi, M., **Forson, B., ***Martin Del Campo, J.S., and Sobrado, P. Kinetic Mechanism of the two-component flavin-dependent monooxygenase involved in valanimycin biosynthesis. 8th Southeast Enzyme Conference, Atlanta, GA, April, 8, 2017.
17. ***Martin Del Campo, J.S., ***Vogelaar, N., and Sobrado, P. Discovery of inhibitors of UDP-galactopyranose mutase from Aspergillus fumigatus. 8th Southeast Enzyme Conference, Atlanta, GA, April, 8, 2017.
18. **Mena, D., ***Martin Del Campo, J.S., and Sobrado, P. Characterization of a thermophilic N-hydroxylating monooxygenae. 8th Southeast Enzyme Conference, Atlanta, GA, April, 8, 2017.
19. **Valentino, H., and Sobrado, P. Characterization of an N-hydroxylating monoxygnease (FzmM) involved in fosfazinomycin biosynthesis in Streptymycces species XY332. 8th Southeast Enzyme Conference, Atlanta, GA, April, 8, 2017.
20. *Marcus, M., Harich, K., ***Del Campo, J., and Sobrado, P. Exploring Novel Flavin-Dependent Chemistry: The Mechanism of Oleate Hydratase from Elizabethkingia meningoseptica. Virginia Academy of Science 94th Annual Meeting, Fredericksburg , VA, May 18-20, 2016.
21. Sobrado, P., ***Del Campo, J., ***Vogelaar, N, and Kingston, D.G.I., The Virginia Tech Center for Drug Discovery Screening Laboratory (VTCDDSL). VirginiaBrainRX Symposium, Richmond, VA, July 15, 2016.

22. **Bufkin, K., ***Del Campo, J.,*** Vogelaar, N., and Sobrado, P. High-throughput screening for inhibitors against Siderophore A from A. fumigatus. VTCDD Research Day, Blacksburg, VA. November, 2016
23. *Marcus, M., Harich, K., ***Del Campo, J., and Sobrado, P. Exploring Novel Flavin-Dependent Chemistry: The Mechanism of Oleate Hydratase from Elizabethkingia meningoseptica. 7th Southeast Enzyme Conference, Atlanta, GA. April 16, 2016.
24. **Abdelwahab, H., ***Da Fonseca, I., El-Sohaimy, S., Adly, C., and Sobrado, P. New insights into L-lysine hydroxylation mechanism by Nocardia farcinica lysine monooxygenase (NbtG). 7th Southeast Enzyme Conference, Atlanta, GA. April 16, 2016.
25. **Medrano, M., and Sobrado, P.Biochemical Characterization of Amycolatopsis Alba AMO: A Flavin Dependent N-hydroxylating Monooxygenase. 7th Southeast Enzyme Conference, Atlanta, GA. April 16, 2016.
26. **Forson, B., ***Del Campo, J., ***Da Fonseca, I., and Sobrado, P., Biochemical characterization of the two-component flavoproteins; Isobutylamine-N-hydroxylase (IBAH) and flavin reductase (FRED). 7th Southeast Enzyme Conference, Atlanta, GA. April 16, 2016.
27. ***Del Campo, J., ***Vogelaar, N., and Sobrado, P., Targeting Iron acquisition in Aspergillus fumigatus: Inhibition of Siderophore. 7th Southeast Enzyme Conference, Atlanta, GA. April 16, 2016.
28. **Medrano, M., and Sobrado, P., Biochemical Studies on a N-hydroxylating monooxygenase from Amycolatopsis alba. VTCDD Research Day. Virginia Tech, October 26, 2015.
29. **Forson, B., ***Del Campo, J.S., ***Da Fonseca, L., and Sobrado, P., Mechanistic Studies of two-component isobutylamine-N-hydroxylase monooxygenase system. VTCDD Research Day. Virginia Tech. October 26, 2015.
30. Binda, C., **Robinson, R., ***Del Campo, J., *Keul, N., *Rodriguez, P., Robinson, H., Mattevi, A., and Sobrado, P. An unprecedented NADPH domain conformation in Lysine Monooxygenase NbtG provides insights into uncoupling of oxygen consumption from substrate hydroxylation. 6th Southeast Enzyme Conference, Atlanta, GA, April 15, 2015.
31. **Abdelwahab, H., and Sobrado, P. Drug resistance in Norcardia farcinica: Mechanism of rifampicin inactivation. 6th Southeast Enzyme Conference, Atlanta, GA, April 15th, 2015
32. *Klancher, K., **Robinson, R., and Sobrado. P., Characterization of mutant isoforms of Siderophore A from Aspergillus fumigatus. Molecular Biophysics Symposium, Virginia Tech, Blacksburg, VA, November 6th, 2014.
33. **Robinson R., *Rodriguez, P., *Keul,N., and Sobrado, P. The flavin-dependent N^6-lysine monooxygenase NbtG from Nocardia farcinica hydroxylates both L- and D-lysine. 18th International Symposium in Flavins and Flavoproteins, Phechaburi, Thailand, July 27-August 1, 2014.
34. *Gringer, A., ***Da Fonseca, I., and Sobrado, P., (2014) Characterization of a flavin dependent monooxygenase from Cupriavidus taiwanensis. Va. J. Sci. 64 (1&2). 106. 91st Annual Meeting of the Virginia Academy of Science, Virginia Tech, Blacksburg, VA, May 22-24, 2013.
35. *Ryan, W.T., ***Kizjakina, K., and Sobrado, P., (2014) Characterization of UDP-arabinopyranose as a substrate of eukaryotic UDP-galactopyranose mutases. Va. J. Sci. 64 (1&2). 106.108. 91st Annual Meeting of the Virginia Academy of Science, Virginia Tech, Blacksburg, VA, May 22-24, 2013.
36. ***Kizjakina, K., *Kraft, L., and Sobrado, P. Insight into the non-canonical flavin-dependent reaction catalyzed by 2-haloacrylate hydratase. ACS 245th Annual Meeting, New Orleans, LA, April 7-11, 2013.
37. *Shirey, C., and Sobrado, P. Role of S257 in the sliding mechanism of NADP(H) in Aspergillus fumigatus SidA. ACS 245th Annual Meeting, New Orleans, LA, April 7-11, 2013.
38. *Rodriguez, P., *Keul, N., **Robinson, R., and Sobrado, P. Lys64 plays a role in ornithine binding in nocobactin 6 monooxygenase. ACS 245th Annual Meeting, New Orleans, LA, April 7-11, 2013.
39. *Keul, N., **Robinson, R., and Sobrado, P. Mechanistic studies on NbtG, a flavin dependent N^6- lysine monooxygenase. ACS 245th Annual Meeting, New Orleans, LA, April 7-11, 2013.
40. *Ellerbrock, J., *Han, A., and Sobrado, P., Role of conserved tryptophan 47 in the active site of flavin-monooxygenase from Methylophaga sp. strain sk1. ACS 245th Annual Meeting, New Orleans, LA, April 7-11, 2013.
41. ***Da Fonseca, ***Kizjakina, K., and Sobrado, P. Functional expression and characterization of UDP-galactopyranose mutases from Leishmania infantum and Leishmania mexicana. ACS 245th Annual Meeting, New Orleans, LA, April 7-11, 2013.

42. **Robinson, R., *Keul, N., *Rodriguez, P., and Sobrado, P. NbtG is a flavin dependent N^6- lysine monooxygenase that is loosely stereospecific. 23rd Enzyme Mechanisms Conference, Coronado, CA, January 4-7, 2013.
43. *Solano, L.M., and Sobrado, P. Identification of Structural Determinants of Coenzyme Selectivity in Eukaryotic UDP-Galactopyranose Mutases. 90th Annual Virginia Academy of Science Meeting, Norfolk State University, Norfolk, VA, May 23-25, 2012.
44. *Ellerbrock, J., **Oppenheimer, M., Dhatwalia, R., Tanner, J.J., and Sobrado , P. Structural ad functional analysis of Trypanosoma cruzi UDP-galactopyranose mutase. 3rd Southeast Enzyme Conference. Atlanta, GA, April 14, 2012.
45. *Keul, N., **Robinson, R., and Sobrado, P., Expression, Purification, and Preliminary Characterization of Members of the N- hydroxylating Monooxygenase Family. 3rd Southeast Enzyme Conference. Atlanta, GA, April 14, 2012.
46. *Tolani, K., ***Kizjakina, K., ***Vogelaar, N., and Sobrado, P. High-throughput screening for inhibitors of Aspergillus fumigatus siderophore A. 3rd Southeast Enzyme Conference. Atlanta, GA, April 14, 2012.
47. ***Romero, E., *Avila, D., and Sobrado, P. Effect of pH on the reductive and oxidative half-reactions of Aspergillus fumigatus siderophore A. 17th International Symposium on Flavins and Flavoproteins, Berkeley, CA, July 24-29, 2011.
48. **Oppemheimer, M., *Valenciano, A.L., ***Qi, J., and Sobrado, P. Eukaryotic UDP-galactopyranose mutases are bi-funcitonal enzymes: Insights into a unique non-redox reaction. 17th International Symposium in Flavins and Flavoproteins, Berkeley, CA, July 24-29, 2011.
49. ***Romero, E., **Fedkenheuer, M, and Sobrado, P. Primary and solvent kinetic isotope effects on the catalysis by Aspergillus fumigatus ornithine hydroxylase. American Society for Biochemistry and Molecular Biology (ASBMB) meeting, Washington DC, April 8-13, 2011.
50. ***Jun, A, **Oppenheirmer, M., and Sobrado, P. High throughput assay to identify inhibitors against UDP-galactopyranose mutase from eukaryotic pathogens. American Society for Biochemistry and Molecular Biology (ASBMB) meeting, Washington DC, April 8-13, 2011.
51. *Valenciano, A.L., and Sobrado, P. Functional expression and characterization of UDP-galactopyranose mutase from Leishmania major. VT-Vector Borne Group, Minisymposium, Virginia Tech, Blacksburg, VA, March 9-11, 2011.
52. ***Qi, J., and Sobrado, P., Trapping of a covalent intermediate in the non-redox reaction catalyzed by UDP-galactopyranose. 1st Southeast Enzyme Conference, Georgia State University, Atlanta, GA, April 10, 2010.
53. *Reeder, R., and Sobrado, P. The Lysine N^6-monooxygenase MbsG from Mycobacterium smegmatis is regulated by substrate binding, 1st Southeast Enzyme Mechanism Conference, Georgia State University, Atlanta, GA, April 10, 2010.
54. *Blumer, A., **Oppenheimer, M., and Sobrado, P. Identification of active site residues in Trypanosoma cruzi UDP-Galactopyranose mutase. 1st Southeast Enzyme Mechanism Conference, Georgia State University, Atlanta, GA, April 10, 2010.
55. **Oppenheimer, M., *Blumer, A., Poulin, M.B., Helm, F. R, Lowary, T.L., and Sobrado, P. Mechanistic studies on UDP-galactopyranose mutase from Aspergillus fumigatus and Trypanosoma cruzi, American Society for Biochemistry and Molecular Biology 2010 Annual Meeting, Anaheim, CA, April 24-28, 2010.
56. **Chocklett, S.W., and Sobrado, P. Biochemical characterization of flavin-dependent N-hydroxylating enzymes from Mycobacterium smegmatis and Aspergillus fumigatus. 238th ACS National Meeting, Washington, DC, August 16-20, 2009.
57. **Chocklett, S.W., and Sobrado, P. Identification of novel drug targets against tuberculosis and related diseases. 25th Graduate Student Assembly, Virginia Tech, Blacksburg, VA, March 25th, 2009.
58. **Oppenheimer, M., and Sobrado, P. Studies of UDP-galactopyranose mutase from Trypanosoma cruzi: A novel drug target against Chagas' disease. 25th Graduate Student Assembly, Virginia Tech, Blacksburg, VA, March 25, 2009.
59. **Oppenheimer, M., and Sobrado, P. Characterization of UDP-galactopyranose mutase from Aspergillus fumigatus: An essential enzyme in cell wall biosynthesis. 3rd Virginia Tech Structural Biology Symposium, Blacksburg, VA, March 27, 2009.

60. *Robinson, R., *Llanos-Velasquez, J., and Sobrado, P. Group 5 Bacterial multicomponent monooxygenases. 86th Virginia Academy of Science Conference, Virginia Commonwealth University, Richmond, VA. May 26-28, 2009.
61. **Chocklett, S.W., and Sobrado, P. Amine hydroxylating enzymes Involved in siderophore biosynthesis from microbial pathogens. 3rd Virginia Tech Structural Biology Symposium. Virginia Tech, Blacksburg, VA, March 27, 2009.
62. **Chocklett, S.W., and Sobrado, P. Biochemical characterization of flavin adenine dinucleotide dependent monooxygenases from Mycobacterium smegmatis and Aspergillus fumigatus involved in siderophore biosynthesis. Second International Interdisciplinary Conference on Vitamins, Coenzymes, and Biofactors, Athens, GA, October 26-31, 2008.
63. **Oppenheimer, M., and Sobrado, P. Expression, purification and characterization of ThmD, the oxidoreductase component of tetrahydrofuran monooxygenase from Pseudonocardia sp. strain K1. Second International Interdisciplinary Conference on Vitamins, Coenzymes, and Biofactors, Athens, GA, October 26-31, 2008.
64. **Chocklett, S.W., and Sobrado, P. Expression, purification and biochemical characterization of a flavin adenine dinucleotide-dependent monooxygenase from Mycobacterium smegmatis involved in mycobactin biosynthesis. Deans' Forum on Infectious Diseases, Virginia Tech, Blacksburg, VA, September 28-29, 2008.
65. **Oppenheimer, M., and Sobrado, P. Functional expression and purification of UDP-galactopyranose mutases from Leishmania major, Aspergillus fumigatus and Trypanosoma cruzi. Deans' Forum on Infectious Diseases, Virginia Tech, Blacksburg, VA, September 28-29, 2008.

TEACHING EXPERIENCE

Courses Taught
- Biochemistry for Life Sciences (BCHM 5124) Department of Biochemistry, Virginia Tech, Fall 2023.
- Biochemistry Seminar (BCHM 5004) Department of Biochemistry, Virginia Tech, Spring 2012-15.
- Protein Structure and Function (BCHM 5242) Department of Biochemistry, Virginia Tech, Fall 2008-11 and 2013.
- Biochemistry Laboratory (BCHM 4224) Department of Biochemistry, Virginia Tech, Spring 2010.
- Biochemical Calculations (BCHM 2114) Department of Biochemistry, Virginia Tech, Spring 2014-20.

UNIVERSITY, COLLEGE, AND DEPARTMENTAL SERVICE

Department of Chemistry, Missouri S&T
- Chair of the Graduate Recruiting Committee (2024-present)
- Promotion and Tenure Committee (2024-present)

University and Interdisciplinary Programs, Missouri S&T
- Member of the Center for Biomedical Research

Department of Biochemistry, Virginia Tech
- Mentor of Junior Faculty: Dr. Brandon Jutras (2018- 2023)
- Mentor of Junior Faculty: Dr. Justin Lemkul (2019-2023)
- Member of the Advisory Committee (2016-2021)
- Chair of the Graduate Program (2015-2021)
- Biochemistry Faculty Search Committee (2016,2017, 2018)
- Biochemistry Department Head Search Committee (2014-2015)
- Chair of Teaching Evaluation Committee (2014, 2017)
- Graduate Recruiting Committee (2007-present)
- Awards Committee (2013-2015)
- Promotion and Tenure Committee (2009)(2013-2016)(2017)(2019-2021)(2023-present)
- Teaching Evaluation Committee (2001,2011,2013, 2018,2020)
- Chronic Human Diseases Faculty Search (2010)
- Mentor of Junior Faculty- Dr. Belen Cassera (2010-2012)

University and Interdisciplinary Programs, Virginia Tech
- Member of VT Senior Administrator Review Committee (2021)
- Member of the University Cluster Operations and Hiring Committee (2017-2018)
- Member of the College of Science Recruiting Committee (2015- 2016)
- Member of the University Task Force on Inclusive Excellence (2013-2014)
- Member of the Graduate Program in Translational Biology, Medicine, & Health- Infection/Immunity Group proposal committee (2012-2013)
- Founding member of Virginia Tech Center for Drug Discovery and steering Committee member (2011- present)
- Chemistry Faculty Search (2012-2013)
- University Graduate Curriculum Committee (2011-2014)
- Microbiology Graduate Recruiting Committee (2007-2010)
- HHMI-Scieneering Program Mentor (2011-2014)
- Member of the Vector Borne Research Group (2007-present)
- Microbiology in the Post Genomic Era- REU Recruiting committee (2011)
- Multicultural Academic Opportunity Program Selection Committee/Mentor (2008-present)
- Member of the Institute for Critical Technology and Applied Science, Sustainable Energy Group (2008-2012)

REVIEWER ACTIVITIES

Ad hoc reviewer of grant proposals
- 2013-present National Institutes of Health (NIH)
- 2013-preset Medical Research Council (MRC), UK
- 2008-present National Science Foundation (NSF)
- 2008-present American Chemical Society (ACS)
- 2008-present Alzheimer's Association (AA)

Ad hoc manuscript reviewer
- 2018-present Nature Chemical Biology
- 2016-present Frontiers Microbiology
- 2015-present Scientific Reports
- 2015-present Nature Chemical Biology
- 2014-present ACS Journal of Physical Chemistry
- 2013-present Biochemica et Biophysica Acta
- 2013-present FEBS J
- 2012-present JACS
- 2012-present PloS ONE
- 2012-present Molecular Microbiology
- 2011-present Journal of the American Chemical Society
- 2011-present Journal of Inorganic Biochemistry
- 2009-present BMC Biochemistry
- 2007-present Biochemistry

RESEARCH MENTORING ACTIVITIES

Former Postdoctoral Scientists
1. Dr. Nancy Vogelaar, Ph.D. Department of Chemistry, California Institute of Technology, July 2011-2017 Current Position: VTCDD Screening Center, Manager
2. Dr. Renata Reis, Ph.D, Department of Chemistry, University of Sao Paolo, Brazil, 2019-2020. Current position: Scientist I Theos Medicines, Boston, MA.

3. Dr. Hao LI, Ph.D., Department of Chemistry, Virginia Tech, Blacksburg, VA 2019-2020. Current position: Postdoc, Takeda Scientific, Boston, MA.
4. Dr. Meital Eckshtain-Levi, Ph.D. Chemistry, Bar Ilan University, Israel, 2016-2017. Current position: Senior Scientist, Pfizer, NY
5. Dr. Julia Martin Del Campo, Ph.D. Biological Systems Engineering, University of Merida, Mexico and Virginia Tech, August 2013-2017. Current position: Research Scientist, Department of Biochemistry, Virginia Tech
6. Dr. Isabel Da Fonseca, Ph.D. Department of Biochemistry, University of Rio Grande, Porto Alegre, Brazil, March 2012-2016. Current Position: Owner of Gaucho Brazilian Restaurant.
7. Dr. Yumin Dai, Ph.D. Chemistry, Virginia Tech, March 2014-March 2015. Current position: Research Scientists at Takeda, Boston, MA.
8. Dr. Somayesadat Badieyan, PhD Department of Biological Systems Engineering, Biological Sciences, January 2012- July 2013. Current position: Research Investigator at the University of Michigan, MI.
9. Dr. Karina Kizjakina, Ph.D Department of Chemistry, Virginia Tech, January 2011- March 2013. Current position: Research Biochemist at Breonics Inc, Albany, NY.
10. Dr. Jun Qi, Ph.D Department of Chemistry, Virginia Tech, January 2009-December 2011. Current position: Senior Research Scientist at Dow Chemicals, Philadelphia, PA.
11. Dr. Elvira Romero, Ph.D Department of Biological Sciences, Spanish Scientific Council, October 2010-December 2011. Current position: AstraZenica, Sweden

Current Graduate Students:

- Kernen Paul Agwaza, Ph.D., 2025-
- Daniel R. Cortazar, Ph.D., 2025-
- Marshall Stoner, Ph.D., 2025-

Former Graduate Students:

1. Brittany Hart, Ph.D. (2020-2025). Current Position: Visiting Professor, Bates College, ME
2. Noah Lyons, Ph.D. (2020-2025). Current Position: Postdoctoral Scientist, North Carolina State University, Dr. Casey Theorit Lab.
3. Sydney Johnson, Ph.D. (2019-2023). Current Position: Postdoctoral Scientist, RevivBio, Cambridge, MA
4. Hannah Valentino, Ph.D. (2016- 2021). Current Position: Senior Scientist II, Birch Biosciences, Portland, OR
5. Yuan-Pu Chiu, M.S. Biochemistry (2019-2020). Current Position: Research Assistant University of Southern California
6. Didier Mena, MS Biochemistry (2016-2018). Current Position: Instructor, Department of Chemistry, University of Nebraska-Lincoln, NE.
7. Hangu Nam, MS Biochemistry (2016-2017). Current Position: Research Associate, Vigene Biosciences, Rockville, MD.
8. Kendra Bufkin, MS Biochemistry (2015-2016). Current Position: Clinical Laboratory Program, Augusta University, GA
9. Benedicta Forson, MS Biochemistry (2014-2016). Current Position: SeraCare Life Sciences, Gaithersburg, MD.
10. Heba Abdelwahab, PhD (2013-2018), Biochemistry. Current Position: Assistant Professor, Department of Chemistry, Damietta University, Egypt.
11. Mynor Medrano, MS Biochemistry (2014-2016). Current Position: Unknown
12. Reeder Robinson, PhD Biochemistry, (2010-2015). Outstanding Graduate Student- Department of Biochemistry. Current position: Research Assistant Professor at the Medical University of South Carolina.
13. Michelle Oppenheimer, PhD Biochemistry, (2007-2012). Outstanding Graduate Student- Department of Biochemistry. Current position: Instructor, Department of Chemistry, Mary Washington University.
14. Mike Fedkenheuer, MS Biochemistry, (2010-2012). Outstanding Master's student in CALS. Obtained a Ph.D. in Plant Molecular Biology at Virginia Tech. Current position: Postdoc at NIH
15. Wyatt Chocklett, MS Biochemistry, 2007-2009- Outstanding Master's student in CALS. Current position: Chief Operating Officer, Doctors Hospital of Sarasota, FL

Past Graduate Committees:

1. Nathan Price, Ph.D., Chemistry, 2020-2024
2. Jacob Chappell, Ph.D. Chemistry, 2019-2024
3. Enab Salama, Ph.D., Biomedical Sciences and Pathology, 2020-2023
4. Desiany Ferreira, Ph.D., Biological Systems Engineering, 2020-2024
5. Maxwell Brooks, MS. Biochemistry, 2020-2023
6. Aaron Brock, Ph.D. Biochemistry, 2019-2023
7. Tanner DeHart, M.S., Biochemistry, 2019- 2022
8. Justin McKinney, MS, Biochemistry, 2020-2022
9. Rowan Woodbridge, M.S., Biochemistry, 2021-2022
10. Mara Kushelman, M.S., Biochemistry, 2021-2022
11. Korliss Britt, M.S., Biochemistry 2020-2022
12. Tam Nguyen, Ph.D., Biochemistry, 2020- 2022
13. Alexa Salsbury, Ph.D. Biochemistry, 2018- 2021
14. Caitlin Cridland, Biochemistry, 2018- 2022
15. Ryan Antal, M.S. Biochemistry, 2019-2020
16. Herbert Hattanus, Biological Systems Engineering, 2017-2019
17. Courtney Long, Ph.D. TBMH, 2015-2019
18. Adepoju Olusegun, Ph.D. Biochemistry, 2016- 2019
19. Michael Casasanta, Ph.D. Biochemistry, Biochemistry, 2015-2019
20. Britton Hipple, MS. Biochemistry, 2017-2018
21. Andreas Sukmana, Biological Sciences, 2017-2018
22. Amanda Fisher, PhD. Biological Systems Engineering, 2013-2017
23. Paul Velander, Ph.D. Biochemistry, 2014-2017
24. Valery McDonald, Biological Sciences, 2015
25. Sulaiman Matarneh, Ph.D. Animal and Poultry Sciences, 2013-2017
26. Sung-Ho, Ph.D., Biological Systems Engineering, 2014-2017
27. Aaron Ramsey, Ph.D. Biochemistry, 2013-2015
28. Daniele Miller, Ph.D. Biochemistry, 2012-2017
29. Eric England, Ph.D. Animal and Poultry Sciences, 2009-2012
30. Zahra Mashadi, Ph.D. Biochemistry, 2007-2011
31. Aida Nourbakhsh, Ph.D. Biochemistry, 2008-2012
32. Somaye Somayesadat, Ph.D. Biological Systems Engineering, 2008- 2012
33. Tracy James, Ph.D. Biological Sciences, 2007-2012
34. Chevron Thorpe, Ph.D. Biochemistry, 2007-2012
35. Linda M. Villa, Ph.D. Biological Sciences, 2009-2012
36. Tracy Scheffler, Ph.D. Animal and Poultry Sciences, 2009-2012
37. Justin Lemkul, Ph.D. Biochemistry, 2007-2012
38. Jenna Hess, MS Biochemistry, 2008-2011
39. Zahra Mashhadi, Ph.D. Biochemistry, 2007-2010
40. Evren Kocabas, MS Biochemistry, 2008-2011

Current Undergraduate Students

Katharine Gray

Former Undergraduate Students from Virginia Tech

1. Kaleigh Ballagh, 2023-2024
2. Amy Poyner, 2023
3. Kathryn Paarsch, 2020-2023
4. Alysa Lainer, 2020-2023

5. Emely Mechnick, 2021-2022
6. Maxim Johnson, 2020-2022
7. Starlina Shapher, Summer 2021
8. Jash Patel, Summerl 2021
9. Lauren Hall, 2018-2019
10. Eric Merten, 2018-2020
11. Lexie Kroeger, Spring 2019
12. Sebastian Jaques, Summer 2019
13. Angelica Quiroz, Spring 2018-2019
14. Ryan Nasser, Fall 2018-2019
15. Will Stone Summer- Fall 2018
16. Sophia LeBlanc Summer 2016
17. Irene Jenkins Fall 2015- 2016
18. Madeline Marcus Fall 2015-Spring 2016
19. Jendeya O'Grady Fall 2015-Spring 2016
20. McKay Hanna Fall 2015-Spring 2016
21. Jessica Minionis Summer-Fall-2015
22. Catherine Klancher Fall 2014-Spring 2015
23. Jordan Tyrell Summer 2013-Fall 2013
24. Kaysha Perrin Fall 2013-Summer 2014
25. William Ryan, Summer 2013-Fall 2014
26. Aaron Gringer, Summer 2013-Fall 2014
27. Jacob Ellerbrock, 2011-Spring 2013
28. Carolyn M. Shirey, 2011-Spring 2013
29. Karishma Tolani, 2011-Spring 2013
30. Nick Keul, Summer 2011-Spring 2013
31. Bismarck Mensah, Spring 2011
32. Katherine Mlynczak, Spring 2011
33. Andre Han, Honors Thesis Biochemistry, Summer 2010-Spring 2011
34. Allison Blumer, Honors Thesis Spring 2009- Spring 2011
35. Reeder Robinson, Senior Thesis Spring 2009-Spring 2010
36. Sahil Kahanna, Honors Thesis Spring 2009-Spring 2010
37. Young Choe, Fall 2007-Spring 2008
38. Brittney Bibb, Summer 2008
39. Travis Schrecengost Summer 2008
40. Anthony Irwin Fall 2007- Summer-2008.
41. Michael Niebanck, Biochemistry, Fall 2007- Summer-2008.
42. Janice Llanos-Velazquez- Fall 2007- Spring 2009
43. Azure MacFarlane, Spring 2009-Summer 2009
44. Jordan Riojas, Summer 2009
45. James Miles, Summer 209
46. Britni Souther, Spring 2009- Summer 2009

Former Undergraduate Students from Other Universities

1. Abigail Nimmo (High Point University, NC) Summer 2023
2. Taylor Enrico (Colby College, ME) Summer 2015
3. Lauren Kraft (Lehigh U. PA) Summer 2012
4. Juan Moliva (Penn State, PA) Summer 2011
5. Kaitlyinn Wolfe (Columbia U.), Summer 2022

Former Students from the Costa Rica Institute of Technology- Undergraduate Senior Thesis

1. Ana Lisa Valenciano, Summer 2010 and 2011

2. Daniel Avila Quiros, Summer 2011
3. Maria Gabriela Moraga, Summer-Fall 2011
4. Luis Miguel Solano, Spring 2012
5. Ariana Umaña- Spring 2015

Former Students from other Universities in Costa Rica- Undergraduate Senior Thesis

1. Maria Paulina Echandi, Fall 2011- Central University
2. Adriana Alfaro, Summer 2011- National University of Costa Rica

Former Students from Spain- Undergraduate Senior Thesis
- Veronica Casado, University of Barcelona.

MENTOR/HOST

1. Marika Mehnert, Fulbright Scholar (2016), TU Bergakademie, Germany
2. Dr. Gustavo Pierdominnici, Fulbright Scholar (2021), Universidad de Quilmes, Argentina.
3. Dr. Mallika Vijayanathan, (2023) University of Copenhagen, Denmark

ACADEMIC ADVISING ACTIVITIES
Advisor of 50 Biochemistry undergraduate students 2012-2016.

EXTERNAL DISSERTATION EXAMINER

1. Mrs. Carla Meints, University of British Columbia, Canada, 2015
2. Mrs. Nourhan Mohamed Abdel-Aziz Abdo, Alexandria University, 2020

EXTERNAL EVALUATOR FOR FACULTY PROMOTION

1. Missouri State University, MO, 2025
2. University of Alabama, Tuscaloosa, AL, 2023
3. Purdue University, West Lafayette, IN, 2021
4. University of Alabama, Tuscaloosa, AL, 2020
5. Pomona College, Claremont, CA, 2020
6. Auburn University, Auburn, AL, 2017
7. University of North Florida, Jacksonville, FL., 2015 and 2016
8. Virginia Commonwealth University, Richmond, VA, 2013