

## ROMILA NINA MASCARENHAS

Department of Chemistry and Biochemistry  
Institute of Molecular Biology  
University of Oregon  
Eugene, OR 97403

Phone 312-731-8967  
[romilam@uoregon.edu](mailto:romilam@uoregon.edu)  
[NCBI bibliography](#)

### EDUCATION

2012- 2017 Ph.D. Biochemistry (Distinction)  
Loyola University Chicago, *Chicago, IL*  
2009-2011 M.S. Chemistry  
St. Josephs College, Bangalore University, *Bangalore, India*  
2006-2009 B.S. Chemistry, Biotechnology, Botany  
Mount Carmel College, Bangalore University, *Bangalore, India*

### PROFESSIONAL AND RESEARCH EXPERIENCE

3/2024-present University of Oregon, *Eugene, OR*  
Assistant Professor  
Department of Chemistry and Biochemistry  
*Research Interest:* Vitamin B<sub>12</sub> trafficking in gut bacteria  
9/2017-3/2024 University of Michigan, *Ann Arbor, MI*  
American Heart Association Postdoctoral Fellow  
NIH K99/R00 Pathway to Independence Award  
Advisor: Dr. Ruma Banerjee  
*Research Area:* Structural enzymology of the human B<sub>12</sub> trafficking pathway  
5/2013-7/2017 Loyola University Chicago, *Chicago, IL*  
Advisor: Dr. Dali Liu  
*Research Area:* Structural enzymology of PLP-dependent drug targets and bacterial quorum quenching enzymes

### PUBLICATIONS

1. **Mascarenhas, R.**, Guha, A., Li, Z., An, S., Ruetz, M., Servalli, J., Banerjee, R. (2023) Cobalt-sulfur coordination chemistry drives B<sub>12</sub> loading onto methionine synthase. *J Am Chem Soc* 145 (45), 24678-24689
2. Gouda, H., **Mascarenhas, R.**, Ruetz, M., Yaw, M., Banerjee, R. (2023) Bivalent molecular mimicry by ADP protects metal redox state and promotes coenzyme B<sub>12</sub> repair. *Proc Natl Acad Sci U.S.A.* 120 (11), e2220677120
3. **Mascarenhas, R<sup>#</sup>**, Ruetz, M<sup>#</sup>, Gouda, H., Yaw, M., Heitman, N., Banerjee, R. (2023) Architecture of the human G-protein-methylmalonyl-CoA mutase nanoassembly for B12 delivery and repair. *Nat Commun* 14, 4332 (2023)
4. **Mascarenhas, R<sup>#</sup>**, Gouda<sup>#</sup>, H., Ruetz, M., Banerjee, R. (2022) Human B<sub>12</sub>-dependent enzymes: Methionine synthase and Methylmalonyl-CoA mutase. *Methods in enzymology* 668, 309-32
5. Gouda, H<sup>#</sup>, **Mascarenhas, R<sup>#</sup>**, Pillay, S., Ruetz, M., Koutmos, M., Banerjee, R. (2021) Patient mutations in human ATP:cobalamin adenosyl transferase differentially affect its catalytic versus chaperone functions *J.Biol.Chem.* 297(6):101373
6. **Mascarenhas, R.**, Li, Z., Gherasim, C., Ruetz, M., Banerjee, R. (2020) The human B<sub>12</sub> trafficking protein CblC processes nitrocobalamin *J.Biol.Chem.* 295(28), 9030-9640
7. **Mascarenhas, R<sup>#</sup>**, Ruetz, M<sup>#</sup>, McDevitt, L., Koutmos, M., Banerjee, R. (2020) Mobile loops in adenosyltransferase control ergonomic binding and reactivity of coenzyme B<sub>12</sub> *Proc Natl Acad Sci U.S.A.* 117(48), 30412-30422

8. Li, Z., **Mascarenhas, R.**, Twahir, U.T., Kallon, A., Deb, A., Yaw, M., Penner-Hahn, J., Koutmos, M., Warncke, K., Banerjee, R., An interprotein Co-S coordination complex in the B<sub>12</sub>-trafficking pathway (2020) *J Am Chem Soc* 142(38), 16334-16345
9. Reidl, C.,<sup>#</sup> **Mascarenhas, R.**,<sup>#</sup> Mohammad, T., Lutz Jr., M., Thomas, P., Fast, W., Liu, D., and Becker, D (2021) Cyclobutanone Inhibitor of Cobalt-Functionalized Metallo- $\gamma$ -Lactonase AiiA with Cyclobutanone Ring Opening in the Active Site *ACS Omega* 6, 21, 13567–13578
10. Asencion Diez, MD., Figueroa, C.M., Esper, M.C., **Mascarenhas, R.**, Aleanzi, M.C., Liu, D., Ballicora, M.A., Iglesias, A.A., (2020) On the simultaneous activation of *Agrobacterium tumefaciens* ADP-glucose pyrophosphorylase by pyruvate and fructose-6-phosphate. *Biochimie*, 171-172, 23-30
11. Juncosa, J. I., K. Takaya, H. V. Le, M. J. Moschitto, P. M. Weerawarna, **R. Mascarenhas**, D. Liu, S. L. Dewey & R. B. Silverman (2018) Design and Mechanism of (S)-3-Amino-4-(difluoromethylenyl)cyclopent-1-ene-1-carboxylic Acid, a Highly Potent gamma-Aminobutyric Acid Aminotransferase Inactivator for the Treatment of Addiction. *J Am Chem Soc*, 140, 2151-2164.
- Highlighted:** Service, R. F. "Chemists seek antiaddiction drugs to battle hijacked brain." *Science* 2018, 360, 139-140.
12. Hill, B.,<sup>#</sup> **Mascarenhas, R.**,<sup>#</sup> Patel, H., Diez, M. A., Wu, R., Iglesias, A. A., Liu, D., & Ballicora, M.A., (2018) The pyruvate regulatory site of the *Agrobacterium tumefaciens* ADP-glucose pyrophosphorylase. *J. Biol. Chem.* 294(4), 1338-1348
13. **Mascarenhas, R.**, H. V. Le, K. D. Clevenger, H. J. Lehrer, D. Ringe, N. L. Kelleher, R. B. Silverman & D. Liu (2017) Selective Targeting by a Mechanism-Based Inactivator against Pyridoxal 5'-Phosphate-Dependent Enzymes: Mechanisms of Inactivation and Alternative Turnover. *Biochemistry*, 56, 4951-4961.
14. Clevenger, K. D., **R. Mascarenhas**, D. Catlin, R. Wu, N. L. Kelleher, E. J. Drake, A. M. Gulick, D. Liu & W. Fast (2017) Substrate Trapping in the Siderophore Tailoring Enzyme PvdQ. *ACS Chem Biol*, 12, 643-647.
15. **Mascarenhas, R.**, P. W. Thomas, C. X. Wu, B. P. Nocek, Q. Q. Hoang, D. Liu & W. Fast (2015) Structural and Biochemical Characterization of AidC, a Quorum-Quenching Lactonase with Atypical Selectivity. *Biochemistry*, 54, 4342-53.

# Indicates equal contribution

## FELLOWSHIPS AND AWARDS

---

|               |  |
|---------------|--|
| 2022          | NIH K99/R00 Pathway to Independence Award                                    |
| 2021          | Leading Edge Fellow  |
| 2020          | Anthony and Lillian Liu Award, Dept. of Biological Chemistry, Univ. Michigan |
| 2019          | American Heart Association, Postdoctoral Fellowship                          |
| 2019 and 2016 | Conference Travel Award, ASBMB   |
| 2017          | Dumbach Medal, Outstanding Achievement in Scholarship, Loyola Chicago        |
| 2016-2017     | Arthur J. Schmitt Dissertation Fellowship, for Leadership and Service        |
| 2015-2016     | Pre-doctoral Teaching Scholars Fellowship, Loyola Chicago                    |
| 2015          | Teaching Assistant Award, Chemistry Dept., Loyola Chicago                    |
| 2015          | Summer Research Mentoring Fellowship, Loyola Chicago                         |

## ORAL AND POSTER PRESENTATIONS

---

|      |  |
|------|--|
| 2024 | Human vitamin B <sub>12</sub> trafficking<br>GRC Chemistry and Biochemistry of Tetrapyrroles, Newport RI (Invited Speaker)   |
| 2023 | Cobalt-sulfur coordination chemistry drives B <sub>12</sub> loading onto methionine synthase<br>ASBMB National Meeting, Seattle, WA (Spotlight Talk)                                   |
| 2022 | Mobile loop dynamics in adenosyltransferase control binding and reactivity of coenzyme B <sub>12</sub> . American Chemical Society, National Meeting, San Diego, CA (Invited Speaker)  |
| 2022 | Structure of an interprotein complex formed between methylmalonyl-coA and its G-protein chaperone. University of Michigan, Structural biology seminar, Ann Arbor, MI (Invited Speaker) |
| 2021 | Mobile loop dynamics in adenosyltransferase control binding and reactivity of coenzyme B <sub>12</sub> . Cell Biology of Metals GRC, West Dover, VT (Poster)                           |

- 2021 Mammalian vitamin B<sub>12</sub> trafficking Leading Edge Symposium (Virtual Speaker)
- 2020 Mobile loop dynamics in adenosyltransferase control binding and reactivity of coenzyme B<sub>12</sub>. University of Michigan Structure Seminar (Virtual Speaker)
- 2019 Nitrite and NO Processing by CblC, A Human B<sub>12</sub> Trafficking Chaperone. Experimental Biology, ASBMB, Orlando FL (Invited Speaker)
- 2018 Nitrite and NO Processing by CblC, A Human B<sub>12</sub> Trafficking Chaperone. Chemistry and Biology of Tetrapyrroles, GRC, Newport, RI (Poster)
- 2016 Elucidating the mechanism of inactivation of PLP dependent drug targets. Enzymes, Coenzymes and Metabolic Pathways. GRS, Waterville, New Hampshire (Invited Speaker)
- 2016 Assessing the specificity of a mechanism based inactivator in PLP dependent drug targets. Midwest Enzyme Chemistry Conference, Chicago, IL (Invited Speaker)
- 2016 Structural and Biochemical characterization of AidC, a Quorum Quenching Lactonase with Atypical Selectivity. Experimental Biology, ASBMB, San Diego, CA (poster)

## MENTORING

---

- 2023-2024 Natalie Heitman (Banerjee Lab, Univ. of Michigan)
- 2021-2023 Madeline Yaw (Banerjee Lab, Univ. of Michigan)
- 2020-2021 Liam McDevitt (Banerjee Lab, Univ. of Michigan)
- 2019 summer Yash Manee (Michigan SummerWorks Summer19)
- 2015-2017 Denis Cipurko (Biochemistry, Loyola Chicago)  
Carbon scholar and FYRE program
- 2015-2017 Patrick Zeniecki (Biochemistry, Loyola Chicago)  
Provost Summer Research Scholarship and Mulcahy Scholarship
- 2014-2015 Maxwell Moore (Biochemistry, Loyola Chicago)  
Carbon scholar
- 2013-2015 Shil Punatar (Biology, Loyola Chicago)  
Provost Summer Research Scholarship and Mulcahy Scholarship

## PROFESSIONAL ACTIVITIES, SERVICE AND OUTREACH

---

- 2019-2021 Secretary, University of Michigan Postdoctoral Association  
<https://umpda.rackham.umich.edu>  
Documented meeting minutes, drafted weekly ebulletin to ~1500 postdoctoral fellows, managed email communication for all subcommittees
- 2020-present Early Career Reviewer Board, Journal of Biological Chemistry
- 2019 summer Michigan SummerWorks, Youth Employment Program  
<https://www.mwse.org/jobseekers/>  
Mentored high school student employed by the Banerjee Laboratory
- 2016-2017 On-site coordinator, American Chemical Society, SEED program  
<https://www.acs.org/content/acs/en/education/students/highschool/seed.html>
- 2015-2016 Chemistry Dept. Representative, Graduate Student Advisory Counsel  
<https://www.luc.edu/gradschool/graduatestudentadvisorycouncil/>
- 2014-2017 Volunteer Organizer, Emerging Scientists Workshop  
<http://jciszek.sites.luc.edu/outreach.html>
- 2014-2017 Volunteer Tutor, Family Matters Chicago, Chicago, IL  
<https://www.familymatterschicago.org>

## TEACHING

---

### Loyola University Chicago (graduate)

- 2015 *Teaching Assistant*, General Chemistry Laboratory (Chem106)
- 2014 *Teaching Assistant*, Biochemistry Laboratory (Chem 373)
- 2013 *Teaching Assistant*, General Chemistry Laboratory (Chem112)
- 2013 *Teaching Assistant*, General Chemistry Laboratory (Chem105)
- 2012 *Teaching Assistant*, General Chemistry Laboratory (Chem111)