

DEBOSMITA SARDAR, PhD

Assistant Professor – University of Colorado Anschutz Medical Campus

Department of Pharmacology

E-mail: debosmita.sardar@cuanschutz.eduTwitter: [@debo_Astrocyte](https://twitter.com/debo_Astrocyte)Lab Website: <https://www.debosardarlab.org/>[Google Scholar Link](#)**PERSONAL STATEMENT**

My academic journey began as a chemist, but my fascination with the brain led me to evolve into a neuroscientist. In the [Glial Epigenetics Lab](#), my research focuses on understanding how the environment shape behaviors through gene regulation in the brain, with an emphasis on glial cells, epigenetics, and sensory processing.

EDUCATION AND RESEARCH EXPERIENCE

- 2024 – **Assistant Professor**
University of Colorado Anschutz Medical Campus, Aurora, Colorado
Department of Pharmacology
- 2022 – 2024 **NIH K99/R00 Postdoctoral Associate**
2017 – 2022 **Postdoctoral Associate**
Baylor College of Medicine, Houston, Texas
Center for Cell and Gene Therapy, Center for Cancer Neuroscience
Advisor: Benjamin Deneen, PhD
- 2010 – 2016 **PhD, Medicinal Chemistry**
University of Utah, Salt Lake City, Utah
College of Pharmacy, Department of Medicinal Chemistry
Dissertation advisor: Eric Schmidt, PhD
- 2007 – 2009 **Masters, Biochemistry and Genetics**
Vellore Institute of Technology, VIT Vellore, Tamil Nadu, India

RESEARCH SUPPORT

- 2022 – 2027 **NIH K99/R00 Pathway to Independence Award – NIDCD**
Title: *Astrocyte responses to neuronal activity in the olfactory bulb*
Funding: \$99,098 K99 per year K99 phase; \$249,000 per year R00 phase

PUBLICATIONS

Postdoctoral Research (2017–2023):

First-authored Research Articles:

1. ***Sardar D**, Cheng YT, Woo J, Choi DJ, Lee ZF, Kwon W, Chen HC, Lozzi B, Cervantes A, Rajendran K, Huang TW, Jain A, Arenkiel B, Maze I, and Deneen B. (2023) Induction of astrocytic Slc22a3 regulates circuits through histone serotonylation. *Science* 380, eade0027, PMID: 37319217 ([link/](#))
Highlighted in Science: Vasile F., and Rouach N. (2023)

- Epigenetic changes in astrocytes make sense. *Science* 380, 6650, 1105–1106
2. ***Sardar D[†]**, Chen H[†], Reyes A, Varadharajan S, Jain A, Curry R, Lozzi B, Rajendran K, Cervantes A, Yu K, Jalali A, Rao G, Mack S, and Deneen B. (2022) Sox9 directs divergent epigenomic states in brain tumor subtypes. *Proc. Natl. Acad. Sci.* 119 (29), PMID: 35858326 [†]*equal contribution* ([link/](#))
 3. ***Sardar D**, Lozzi BL, Woo JW, Huang TW, Cvetkovic C, Creighton C, Krencik R, and Deneen B. (2021) Mapping astrocyte transcriptional signatures in response to neuroactive compounds. *Int. J. Mol. Sci.* 22 (8): 3975, PMID: 33921461 ([link/](#))

Co-authored Research Articles:

4. Cvetkovic C, Patel R, Shetty A, Hogan MK, Anderson M, Basu N, Aghlara-Fotovats S, Ramesh S, ***Sardar D**, Veisesh O, Ward ME, Deneen B, Horner PJ, and Krencik R. (2022) Assessing Gq-GPCR-induced human astrocyte reactivity using bioengineered neural organoids. *J. Cell Biol.* 221 (4): e202107135, PMID: 35139144
5. Ung K, Huang TW, Lozzi B, Woo J, Hanson E, Pekarek B, Tepe B, ***Sardar D**, Cheng YT, Liu G, Deneen B, and Arenkiel BR. (2021) Olfactory bulb astrocytes mediate sensory circuit processing through Sox9 in the mouse brain. *Nat. Commun.* 12 (1): 1–15, PMID: 34471129
6. Huang AY[†], Woo JW[†], ***Sardar D**, Lozzi BL, Huerta NAB, Lin JC, Felice D, Jain A, Paulucci-Holthausen A, and Deneen B. (2020) Region-specific transcriptional control of astrocyte function oversees local circuit activities. *Neuron* 106 (6), 992–1008, PMID: 32320644 [†]*equal contribution*
7. Lozzi B, Huang TW, ***Sardar D**, Huang AY, and Deneen B. (2020) Regionally distinct astrocytes display unique transcription factor profiles in the adult brain. *Front. Neurosci.* 106 (6): 992–1008, PMID: 3253350
8. Laug D, Huang TW, Huerta NAB, Huang AY, ***Sardar D**, Ortiz-Guzman J, Carlson JC, Arenkiel BR, Kuo CT, Mohila CA, Glasgow SM, Lee HK, and Deneen B. (2019) Nuclear factor I-A regulates diverse reactive astrocyte responses after CNS injury. *J. Clin. Investig.* 129 (10): 4408–4418, PMID: 31498149

Reviews and Book Chapters:

9. ***Sardar D**, and Deneen B. (2021) Rnf43 is “lord of the ring” finger proteins in remyelination. *Neuron*, 109 (19): 3069–3071
10. ***Sardar D**, Cheng Y, Szewczyk L, Deneen B, and Molofsky AV. (2020) Mechanisms of astrocyte development, *Comprehensive Developmental Neuroscience*, Chapter 32, 807–827

Ph.D. Research (2011–2016):

First-authored Research Articles:

11. ***Sardar D**, Hao Y, Lin Z, Morita M, Nair S, and Schmidt EW. (2017) Enzymatic N- and C-protection in RiPP natural products. *J. Am. Chem. Soc.* 139 (8): 2884–2887, PMID: 28195477
12. ***Sardar D**, Lin Z, and Schmidt EW. (2015) Modularity of RiPP enzymes enables designed synthesis of decorated peptides. *Cell Chem. Biol.* 22 (7), 907–916, PMID: 26165156
13. ***Sardar D**, Pierce E, McIntosh JA, and Schmidt EW. (2015) Recognition sequences and substrate evolution in cyanobactin biosynthesis. *ACS Synth. Biol.* 4 (2), 167–176, PMID: 28891639

Co-authored Research Articles:

14. Gu W, ***Sardar D**, Pierce E, and Schmidt EW. (2018) Roads to Rome: Role of multiple cassettes in cyanobactin RiPP biosynthesis. *J. Am. Chem. Soc.* 140 (47): 16213–16221, PMID: 30387998
15. Morita M, Hao Y, Jokela JK, ***Sardar D**, Lin Z, Sivonen K, Nair SK, and Schmidt EW. (2018) Post-translational tyrosine geranylation in cyanobactin biosynthesis. *J. Am. Chem. Soc.* 140 (19): 6044–6048, PMID: 29701961
16. Tianero MD, Pierce E, Raghuraman S, ***Sardar D**, McIntosh JA, Heemstra JR, Schonrock Z, Covington BC, Maschek JA, Cox JE, Bachmann BO, Olivera BM, Ruffner DE, and Schmidt EW. (2016) Metabolic model for diversity-generating biosynthesis. *Proc. Natl. Acad. Sci.* 113 (7): 1772–1777, PMID: 26831074
17. Kakule TB, ***Sardar D**, Lin Z, and Schmidt EW. (2013) Two related pyrrolidinedione synthetase loci in *Fusarium heterosporum* ATCC 74349 produce divergent metabolites. *ACS Chem. Biol.* 8 (7): 1549–557, PMID: 23614382

Reviews and Book Chapters:

18. ***Sardar D**, and Schmidt EW. (2016) Combinatorial biosynthesis of RiPPs: docking with marine life. *Curr. Opin. Chem. Biol.* 31: 15–21, PMID: 26709871 *review article
19. ***Sardar D**, Tianero MD, and Schmidt EW. (2016) Directing biosynthesis: practical supply of natural and unnatural cyanobactins. *Methods Enzymol.* 575: 1–20 *book chapter

Graduate Research Fellowship (2010–2011):

Masters' Research (2009–2010):

20. Lilavivat S, ***Sardar D**, Jana S, Thomas GC, and Woycechowsky K. (2012) *In vivo* encapsulation of nucleic acids using an engineered nonviral protein capsid. *J. Am. Chem. Soc.* 134 (32): 13152–13155, PMID: 22827162
21. Manoj KM, Parashar A, Avanthika V, Goyal S, Moharana S, Singh PG, Gade SK, Periyasami K, Jacob RS, ***Sardar D**, Singh S, Kumar R, and Gideon DA. (2016) Atypical profiles and modulations of heme-enzymes catalyzed outcomes by low amounts of diverse additives suggest diffusible radicals' obligatory involvement in such redox reactions. *Biochimie* 125: 91–111, PMID: 26969799

HONORS AND AWARDS

2024	Selected as an Emerging Leader in Neuroscience, Weill Cornell Medicine
2023	Society for Neuroscience – Trainee Professional Development Award
2022	Dean's Award of Excellence, Baylor College of Medicine
2022	NIH K99/R00 Pathway to Independence Award
2022	Best speaker, Center for Cell and Gene Therapy, Baylor College of Medicine
2010	Graduate Research Fellowship, Biological Chemistry Program, University of Utah

SELECTED ORAL PRESENTATIONS

2024	UCSF EPSP, External Postdoc Seminar Program, UCSF * <i>honorarium</i> ASN: American Society for Neurochemistry, Portland, Oregon * <i>invited</i> Emerging Leaders in Neuroscience, Weill Cornell Medicine * <i>honorarium</i>
2023	Yale SYNAPSES, Seminars at Yale Neuroscience, Yale University UCLA SYNCS, Seminars by Young Neurosciences Citizen Scholars * <i>honorarium</i> SfN: Society for Neuroscience – Olfaction: Circuits and Behavior, DC MPFI NeuroMEETS, Max Planck Florida Institute for Neuroscience * <i>honorarium</i> UPenn P-SPINE Postdoc Seminars, University of Pennsylvania

- Cornell Future Faculty Symposium, Cornell University
 NYU SPiNES, Seminars by Postdocs in Neuroscience **honorarium*
 AChemS Early Career Investigator Seminar Series **invited, honorarium*
 Center for Cancer Neuroscience, Baylor College of Medicine **invited*
 Miami Winter Symposium 2023 – Molecular Neuroscience, Miami, Florida
 2022 Center for Cell and Gene Therapy Conference, Houston **awarded best speaker*
 Cold Spring Harbor Laboratory: Glia in Health and Disease, New York
 Neurological Research Institute, Houston, Texas **invited*
 2016 Program for Interdisciplinary Training in Chemical Biology, Salt Lake City **invited*
 2014 Molecular Biology and Biological Chemistry PhD Retreat, Salt Lake City **invited*
 2014 Gordon Research Seminars on Marine Natural Products, Ventura, California

MENTORING AND TEACHING EXPERIENCE

- 2021 Zhung-Fu Lee (graduate student rotation), Corey St-Romain (Medical Scientist Training Program), Amanda Reyes (undergraduate student internship)
 2019 Victoria Soeung (graduate student rotation)
 2018 Mary Edgington (graduate student rotation)
 2016 Aidan Preston (graduate student rotation)
 2015 Jiawei Wang (graduate student rotation), Lizzy Staude (undergraduate internship)
 2014 Wenjia Gu (graduate student rotation), Zachary Cruz (graduate student rotation)
 2013 Zachary Schonrock (undergraduate student summer internship)

PEER-REVIEW ACTIVITIES

- 2023 *Nature Neuroscience*
 2018 – 2020 Assisted in reviewing at the *Journal of Neuroscience, Glia*
 2013 – 2015 Assisted in reviewing at *Cell Chemistry and Biology, Chemical Reviews*

CONTRIBUTIONS TO DIVERSITY, EQUITY, AND INCLUSION

- 2023 – **Founder of a postdoctoral seminar series:** to provide networking platforms for advanced postdocs who are dedicated to mentorship (SPAI: Seminars for Postdocs Advancing Inclusion) ([link/](#))
 2023 – 2024 **Co-founder of an outreach program for undergraduates:** focused on underrepresented students in Houston encouraging them to pursue PhD
 2023 **Outreach for high school students:** mentoring of diverse 8th–10th grade students on the scientific method through the Mini-PhD Program
 2023 **Panelist:** discussion on “Imposter Phenomena & Confronting Fear and Failure” at 8th Annual Baylor College of Medicine Diversity Admissions Symposium
 2020 – 2021 **Bench mentor:** in a Diversity Program at Baylor College of Medicine: Summer Undergraduate Research Training Program (SMART)
 2017 – 2022 **Mentoring:** 5 graduate students and trainees including 3 minorities and 3 women
 2011 – 2016 **Mentoring:** 6 graduate students and trainees including 4 minorities and 3 women

SERVICE CONTRIBUTIONS

- 2024 **Author:** an article on the K99/R00 Pathway to Independence Award written for the National Postdoctoral Association’s newsletter – Postdocket ([link/](#))
 2024 **Workshop:** Led a ‘Research Vision Workshop’ at Baylor College of Medicine for postdocs on the faculty job market

- 2024 **Mentoring:** Pop-up mentoring session for postdocs at Baylor College of Medicine
- 2024 **Invited speaker:** “Developing Research Vision”, discussion for Baylor College of Medicine postdocs on academic job market
- 2023 **Developer:** Individual Development Plan for Baylor College of Medicine postdocs
- 2023 **Panelist and Moderator:** Postdoctoral Research Opportunities in Science (PROS) for prospective postdocs at Baylor College of Medicine
- 2023 **Invited speaker:** “Advice on getting the NIH K99/R00 Pathway to Independence Award”, invited by Houston Methodist Postdoctoral Association
- 2022, 2019 **Judge:** poster session at Center for Cell and Gene Therapy Retreat
- 2019 **Invited poster:** Astrocyte development and function, by Novus Biologicals

OTHER CAREER HIGHLIGHTS

- 2023 **Podcast Interview:** Neurotransmissions Video Podcast by Lesley Colgan at Max Planck Florida Institute for Neuroscience ([link/](#))
- 2023 **Invited Panelist:** representative of early career researchers, hosted by AAAS and NSF: How Can Public Access Advance Equity and Learning ([link/](#))
- 2023 **Interview for Science:** Featured in Protostar at *Science* newsletter *ScienceAdviser*, July 5th, by Christie Wilcox ([link/](#))
- 2023 **Postdoc Spotlights:** Featured in the Postdoc News newsletter at Baylor College of Medicine, Volume 3, Issue 39 ([link/](#))
- 2023 **Interview on Sardar et al, 2023:** “Astrocyte processing of serotonin regulates olfactory perception” by Anna Maria Rodriguez ([link/](#))
- 2022 **Interview for Baylor College of Medicine From the Labs:** “From my Perspective: Dr. Debosmita Sardar shares her experiences during postdoctoral training”, Anna Maria Rodriguez ([link/](#))
- 2022 **Interview on Sardar and Chen et al, 2022:** “Unanticipated findings cast new light on the genetic regulation of brain tumors”, Anna Maria Rodriguez ([link/](#))
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