DEBOSMITA SARDAR, PhD
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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 of olfaction.

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

2025 – 2028 **Klingenstein Fellowship Award in Neuroscience**
Title: *Glial epigenetic encoding of odor sensory information*
Funding*:* $150,000 per year for 3 years

PUBLICATIONS

2024 onwards:

1. ***Sardar D**, and Kutateladze T. (2025) Circadian rhythms are set by epigenetic mark in neurons. *Nature* 637 (8047), 795–796, PMID: 39779988 **Nature News and Views*

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. Chen H, He P, McDonald M, Williamson MR, Varadharajan S, Lozzi B, Woo J, Choi DJ, ***Sardar D**, Huang-Hobbs E, Sun H, Ippagunta SM, Jain A, Rao G, Merchant TE, Ellison DW, Noebels JL, Bertrand KC, Mack SC, and Deneen B. (2024) Histone serotonylation regulates ependymoma tumorigenesis. *Nature* 632, 903–910, PMID: 39085609
5. Cvetkovic C, Patel R, Shetty A, Hogan MK, Anderson M, Basu N, Aghlara-Fotovat S, Ramesh S, ***Sardar D**, Veiseh 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
6. 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
7. Huang AY†, Woo JW†, ***Sardar D,** Lozzi BL, Huerta NAB, Lin JC, Felice D, Jain A, Paulucci-Holthauzen 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*
8. 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
9. 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

2025	Klingenstein Neuroscience Fellow
2024	Emerging Leader in Neuroscience, Weill Cornell Medicine
2023	Society for Neuroscience – 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 (only invited or selected from abstracts given below)

2024 UCSF EPSP, External Postdoc Seminar Program, UCSF *honorarium
ASN: American Society for Neurochemistry, Portland, Oregon *invited
Emerging Leaders in Neuroscience, Weill Cornell Medicine *honorarium
2023 Yale SYNAPSES, Seminars at Yale Neuroscience, Yale University
UCLA SYNCS, Seminars by Young Neurosciences Citizen Scholars *honorarium
SfN: Society for Neuroscience – Olfaction: Circuits and Behavior, DC
MPFI NeuroMEETS, Max Planck Florida Institute for Neuroscience *honorarium
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 Brittney Lozzi (research technician)
2019 Victoria Soeung (graduate student rotation)
2018 Mary Edgington (graduate student rotation)
Highlight: 1) Brittney Lozzi (first author: Lozzi et al., 2020), currently graduate student at BCM
2) Amanda Reyes (second author: Sardar and Chen et al., 2022), currently graduate student at UT Southwestern Medical Center
3) Zhung-Fu Lee (co-author: Sardar et al., 2023), currently graduate student at BCM

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)
Highlight: Wenjia Gu (first author: Gu et al., 2018), currently scientist at Sutro Biopharma

PEER-REVIEW ACTIVITIES

2025 *Cell Reports, Nature Neuroscience*
2023 – 2024 *Nature Neuroscience*
2013 – 2020 Assisted advisor in reviewing: *Journal of Neuroscience*, *Glia*, *Cell Chemistry and Biology*, *Chemical Reviews*

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 – **Founder of a postdoctoral seminar series SPAI:** to provide networking platforms for advanced postdocs who are dedicated to mentorship

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 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 Admissions Symposium

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

2020 – 2021 **Bench mentor**: in the Summer Undergraduate Research Training Program (SMART) for under-represented college students

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/)