

EDUCATION

- 2012 – 2017 ● **Ph.D., Molecular Biology & Neuroscience (Highest Grade)**, University of Vienna, Austria & Janelia Research Campus, USA
Thesis: Neuronal control of backward walking in *Drosophila melanogaster*
Advisor: Dr. Barry Dickson
- 2010 – 2012 ● **M.Sc. Biotechnology**, University of Hyderabad, India
Thesis: Role of Hsp82 in the DNA damage response pathway
Advisor: Dr. Sunanda Bhattacharyya
- 2007 – 2010 ● **B.Sc. Microbiology**, St. Xavier's College Kolkata, India

PROFESSIONAL EXPERIENCE

- 04/2019 – present ● **Postdoctoral Research Scientist**, Zuckerman Institute of Columbia University & Howard Hughes Medical Institute (HHMI)
Neuronal basis of individual recognition and social hierarchies in mice.
Advisor: Dr. Richard Axel
- 10/2018 – 12/2018 ● **Invited Visiting Scientist**, Institute of Zoology at University of Cologne
Quantitative analysis of joint kinematics in backward walking flies
Advisors: Dr. Ansgar Büschges & Dr. Barry Dickson
- 05/2011 – 07/2011 ● **IASc-INSANA-SI Summer Fellow**, Center for Cellular and Molecular Biology, Hyderabad (CCMB), India
Expression and Purification of FAAL10 from *Mycobacterium tuberculosis*
Advisor: Dr. Rajan Sankarnarayanan

HONORS

RESEARCH

- 01/2025 – 01/2027 ● **NARSAD Young Investigator Grant** (\$70,000)
Brain and Behavior Research Foundation
- 10/2012 – 09/2015 ● **Marie Curie Graduate Fellowship**
Marie Curie FP7 Programme FLiACT Training Network
- 08/2010 – 07/2012 ● **Fellowship for Masters in Biotechnology**
Full tuition, Department of Biotechnology (DBT), Government of India
- 05/2011 – 07/2011 ● **Summer Research Fellowship**
Indian Academy of Sciences-Indian National Science Academy-The National Academy of Sciences (IASc-INSANA-SI)

PUBLIC ENGAGEMENT

- Fall 2023, Spring 2024 ● **Outreach and Public Engagement Seed Grant** (\$750)
Zuckerman Institute's Public Engagement Program, Columbia University
Founded [the Lab](#): Bridging Science and Community through Improv Comedy

PUBLICATIONS

PEER REVIEWED

- Kai Feng, **Rajyashree Sen**, Ryo Minegishi, Michael Dübbert, Till Bockemühl, Ansgar Büschges, Barry J Dickson (2020). "Distributed control of motor circuits for backward walking in *Drosophila*" **Nature Communications**. 11(6166).
DOI: <https://doi.org/10.1038/s41467-020-19936-x>
- **Rajyashree Sen**, Kaiyu Wang, and Barry J. Dickson (2019). "Two lumps ascending neurons mediate touch-evoked reversal of walking direction in *Drosophila*" **Current Biology** 29(24): 4337-4344.e5.
DOI: <https://doi.org/10.1016/j.cub.2019.11.004>
- **Rajyashree Sen**, Ming Wu, Kristin Branson, Alice Robie, Gerald M. Rubin and Barry J. Dickson (2017). "Moonwalker descending neurons mediate visually evoked retreat in *Drosophila*" **Current Biology** 27(5): 766-771.
DOI: <https://doi.org/10.1016/j.cub.2017.02.008>

PRESENTATIONS

INVITED

- 06/2024 ● **Talk** | Combined coding of individual identity and spatial locations in the mouse dorso-medial prefrontal cortex (dmPFC) (**nominated**)
Zuckerman Institute Postdoctoral Seminar (ZIPS), Zuckerman Institute, Columbia University, USA
- 10/2020 ● **Talk** | Neurons that switch flies into reverse gear
Modern Trends in Microbiology Chapter XVII, International Webinar St. Xavier's College Kolkata, India (Virtual)
- 11/2020 ● **Featured Speaker** | Distributed control of motor circuits for backward walking in *Drosophila*. Undergraduate Journal Club in Bucknell University, USA (Virtual)
- 08/2019 ● **Talk** | Neuronal control of backward walking in *Drosophila melanogaster*
Indian Institute of Science Education and Research (IISER) Pune, India
- 05/2018 ● **Talk** | Neuronal control of backward walking in *Drosophila* (**nominated**)
Junior Scientist Seminar Series, Janelia Research Campus, USA

CONTRIBUTED

- 09/2023 ● **Poster** | Exposure to different mice elicits different representations in the prefrontal cortex. Rajyashree Sen, Alexander Medoff, Mira Vanchiswar, Larry Abbott, and Richard Axel.
Howard Hughes Medical Institute Science Meeting, USA
- 04/2018 ● **Poster Blitz & Selected Poster** | Neuronal control of backward walking in *Drosophila melanogaster*. Rajyashree Sen, Till Bockemühl, Kaiyu Wang, Michael Dübbert, Salil Bidaye, Ansgar Büschges and Barry Dickson.
Neural Circuits of the Insect Ventral Nerve Cord, Janelia Research Campus, USA
- 10/2013 ● **Selected Poster** | Neural control of directed walking in *Drosophila melanogaster*. Rajyashree Sen, Salil Bidaye and Barry J. Dickson.
Emerging Techniques to Map and Functionally Characterize Neural Circuits in Drosophila, Janelia Research Campus, USA
- 10/2013 ● **Selected Poster** | Neural control of directed walking in *Drosophila melanogaster*. Rajyashree Sen, Salil Bidaye and Barry J. Dickson.
Neurobiology of Drosophila Meeting, Cold Spring Harbor Laboratory, USA

TEACHING

TRAINING

2017

- **Scientists Teaching Science**
National Institute of Health

GUEST LECTURER

Fall 2023, Fall 2024

- **The Parental Brain (Seminar)**
Columbia University, USA

Developed a module for the course syllabus and led discussions of scientific papers using active learning techniques alongside Dr. Bianca Jones Marlin.

LECTURER

Fall 2024

- **The Parental Brain (Columbia University's Prison Education Project)**

Columbia University's Center for Justice & Zuckerman Institute, USA

Adapted and taught a semester-long Columbia University course at **Taconic Correctional Facility** (medium-security women's prison). Tailored the syllabus and teaching approach to meet student needs in a technology-free environment. In collaboration with Dr. Bianca Jones Marlin, orchestrated a collaborative student assignment between the students at Taconic and Columbia.

MENTORSHIP

TRAINING

2024

- **Research Mentor Training Workshop**

Center for the Improvement of Mentored Experiences in Research (CIMER)

RESEARCH SUPERVISION

*denotes underrepresented minorities

04/2024 – 11/2024

- **Mentor for Black Undergraduate Mentorship Program (BUMP)**

Supervised Matt Garrett* *Current: Undergraduate at Columbia University*

01/2023 – present

- **Research Assistant:** Alexander Medoff

05/2023 – 06/2023

- **Undergraduate:** Fatma Albwardy*

Current: Undergraduate at Columbia University

01/2020 – 05/2023

- **Research Assistant:** Mira Vanchiswar*

Current: Graduate student at Cornell University, Ithaca

01/2021 – 05/2023

- **Undergraduate:** Emily Sun* (Columbia University)

Current: Research Assistant at Columbia University

01/2023 – 04/2023

- **Undergraduate:** Lina Huang* (Columbia University)

Current: Undergraduate at Columbia University

06/2022 – 08/2023,

- **Undergraduate:** Delaney Bessel* (Franklin & Marshall College)

01/2023 – 02/2023

Current: Research Assistant at MSK Cancer Center

06/2021 – 07/2021

- **Mentor for Summer Program for Undergraduate Rising Stars (SPURS)**

Supervised Emmanuel Woredekal* (Rutgers University)

Current: M.D. candidate, Sidney Kimmel Medical College, Philadelphia

01/2018 – 03/2019

- **Women/Non-Binary Peer Mentoring Group**

Janelia Research Campus, USA

WORKSHOPS

10/2019

- **Janelia Junior Scientist Workshop (selected)**

Mechanistic Cognitive Neuroscience

Janelia Research Campus, USA

10/2012 – 09/2015	Marie Curie FLiACT Training Network Workshops on Fly Neuroscience <i>Max Planck Institute for Chemical Ecology, Jena; Max Planck Institute of Neurobiology, Martinsried; KUL, Leuven, Belgium; Center for Genomic Regulation, Barcelona</i>
COMMUNICATION & OUTREACH <i>IMPROV COMEDY</i>	
11/2023 – present	Founder, producer & performer in ‘The Lab’: a science-inspired improv group and quarterly show, launched with a Public Engagement Seed Grant from the Zuckerman Institute. This project’s mission is to make neuroscience accessible and engaging through improv comedy. We interview scientists whose lives and work inspire our shows. Our shows aim to demystify neuroscience, humanize scientists, and provide practical advice to young people interested in scientific research.
2012 – present	Entertained large audiences for over 10 years as a performer with various improv teams, including house teams at Magnet Theater (New York), Washington Improv Theater (DC), and Laugh Index Theater (DC).
07/2024 – present	Second City Conservatory, Second City New York, USA
10/2019 – 10/2021	Upright Citizen’s Brigade Diversity Scholarship <i>Upright Citizen’s Brigade, New York, USA</i>
<i>WRITING</i> 07/2023	Writing Merit Scholarship – New York State Summer Writers Institute <i>Skidmore College, New York, USA</i> Nominated by Zuckerman Institute’s 2022 writer-in-residence Claire Messud
<i>PUBLIC SPEAKING & ENGAGEMENT</i> 07/2023	Invited Scientist Storyteller at Story Collider Show: Seismic Shifts <i>Caveat, New York, USA</i>
06/2023	Invited Scientist at PowerPoint Roulette (a show where comedians improvise a presentation using slides they have never seen before) <i>Caveat, New York, USA</i>
05/2022	Invited Scientist at National Jazz Museum Science and Jazz Talk Show: The Improvising Brain <i>National Jazz Museum in Harlem & Zuckerman Institute, New York, USA</i>
03/2020	Finalist, 2020 iBiology Young Scientist Seminars Series Competition <i>iBiology & Alan Alda Center for Communicating Science</i>
REFERENCES	Richard Axel, M.D. (Postdoctoral Advisor) Nobel Laureate, 2004 Co-director & Investigator Zuckerman Institute of Columbia University Email: ra27@columbia.edu Phone: +1 212-853-1010

● **Larry Abbott, Ph.D.** (*Postdoctoral Advisor*)

Investigator

Zuckerman Institute of Columbia University

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● **Barry Dickson, Ph.D.** (*Graduate Advisor*)

Investigator

Queensland Brain Institute, The University of Queensland.

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