

### 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). "Twolumps 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,

01/2023 – 02/2023

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

*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*

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| 10/2012 – 09/2015                       | ● <b>Marie Curie FLiACT Training Network Workshops on Fly Neuroscience</b><br><i>Max Planck Institute for Chemical Ecology, Jena; Max Planck Institute of Neurobiology, Martinsried; KUL, Leuven, Belgium; Center for Genomic Regulation, Barcelona</i>  |
| <b>COMMUNICATION &amp; OUTREACH</b>     |  |
| <i>IMPROV COMEDY</i>                    |  |
| 11/2023 – present                       | ● <b>Founder, producer &amp; performer in ‘The Lab’</b> : 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                          | ● <b>Entertained large audiences</b> 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                       | ● <b>Second City Conservatory, Second City New York, USA</b>   |
| 10/2019 – 10/2021                       | ● <b>Upright Citizen’s Brigade Diversity Scholarship</b><br><i>Upright Citizen’s Brigade, New York, USA</i>  |
| <i>WRITING</i>                          |  |
| 07/2023                                 | ● <b>Writing Merit Scholarship – New York State Summer Writers Institute</b><br><i>Skidmore College, New York, USA</i><br>Nominated by Zuckerman Institute’s 2022 writer-in-residence Claire Messud  |
| <i>PUBLIC SPEAKING &amp; ENGAGEMENT</i> |  |
| 07/2023                                 | ● <b>Invited Scientist Storyteller at Story Collider Show: Seismic Shifts</b><br><i>Caveat, New York, USA</i>  |
| 06/2023                                 | ● <b>Invited Scientist at PowerPoint Roulette</b> (a show where comedians improvise a presentation using slides they have never seen before)<br><i>Caveat, New York, USA</i>   |
| 05/2022                                 | ● <b>Invited Scientist at National Jazz Museum Science and Jazz Talk Show: The Improvising Brain</b><br><i>National Jazz Museum in Harlem &amp; Zuckerman Institute, New York, USA</i>   |
| 03/2020                                 | ● <b>Finalist, 2020 iBiology Young Scientist Seminars Series Competition</b><br><i>iBiology &amp; Alan Alda Center for Communicating Science</i>   |
| <b>REFERENCES</b>                       |  |
|   | ● <b>Richard Axel, M.D. (Postdoctoral Advisor)</b><br>Nobel Laureate, 2004<br>Co-director & Investigator<br>Zuckerman Institute of Columbia University<br>Email: <a href="mailto:ra27@columbia.edu">ra27@columbia.edu</a><br>Phone: +1 212-853-1010  |

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● **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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