

Rajyashree Sen, Ph.D.

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Zuckerman Institute, Columbia University, 3227 Broadway, New York, NY 10027

EDUCATION

University of Vienna, Austria / Janelia Research Campus, USA 2012 – 2017
Ph.D., Neuroscience and Molecular Biology (*Grade 1, excellent*)
Advisor: Dr. Barry Dickson

University of Hyderabad, India 2010 – 2012
Master of Science in Biotechnology

St. Xavier's College Kolkata, India 2007 – 2010
Bachelor of Science in Microbiology

RESEARCH EXPERIENCE

Postdoctoral associate | Zuckerman Institute at Columbia University 04/2019 – present
Supervisor: Dr. Richard Axel
Neuronal basis of individual recognition and social hierarchies in mice

Postdoctoral associate | Janelia Research Campus 01/2018 – 03/2019
Supervisor: Dr. Barry Dickson
*Neuronal control of backward walking in *Drosophila melanogaster**

PhD Project | Research Institute of Molecular Pathology at University of Vienna & Janelia Research Campus 10/2012 – 12/2017
Supervisor: Dr. Barry Dickson
*Neuronal control of backward walking in *Drosophila melanogaster**

Invited Visiting Scientist | Institute of Zoology at University of Cologne 10/2018 – 12/2018
Supervisors: Dr. Ansgar Büschges & Dr. Barry Dickson
Quantitative analysis of joint kinematics in backward walking flies

Master Thesis Project | University of Hyderabad 08/2010 – 07/2012
Supervisor: Dr. Sunanda Bhattacharyya
Role of Hsp82 in the DNA damage response

IASc-INSANA-NASI Summer Fellow | Center for Cellular and Molecular Biology, Hyderabad, India 05/2011 – 07/2011
Supervisor: Dr. Rajan Sankarnarayanan
*Expression and Purification of FAAL10 from *Mycobacterium tuberculosis**

Bachelor Thesis Project | St. Xavier's College Kolkata 09/2009 – 04/2010
Supervisor: Dr. Arup Kumar Mitra
*Characterization of pigmented *Penicillium* sp from hydrocarbon enriched Source*

Bachelor Project | St. Xavier's College Kolkata 02/2008 – 08/2008
Supervisor: Dr. Arup Kumar Mitra
Antiglycemic and antioxidant effect of mushroom diet

PUBLICATIONS

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.

Rajyashree Sen, Kaiyu Wang, and Barry J. Dickson (2019). "Twoumps ascending neurons mediate touch-evoked reversal of walking direction in *Drosophila*" *Current Biology* 29(24): 4337-4344.e5.

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).

AWARDS AND FELLOWSHIPS

Marie Curie Research Training Network FliACT Associate Fellow	10/2013 – 09/2015
Marie Curie Research Training Network FliACT Fellowship	10/2012 – 09/2013
Department of Biotechnology (DBT) Fellowship for Masters in Biotechnology, Government of India	08/2010 – 07/2012
Indian Academy of Sciences-Indian National Science Academy-The National Academy of Sciences (IASc-INSANASI) Summer Fellowship	05/2011 – 07/2011

PRESENTATIONS

Invited Talk <i>Neurons that switch flies into reverse gear.</i> IISER Pune, India (Virtual)	02/2021
Invited Talk <i>Neurons that switch flies into reverse gear.</i> Modern Trends in Microbiology Chapter XVII, International Webinar St. Xavier's College Kolkata, India (Virtual)	10/2020
Invited Journal Club Speaker <i>Distributed control of motor circuits for backward walking in Drosophila.</i> Invited speaker for an undergraduate class, Bucknell University, USA (Virtual)	11/2020
Selected Talk and Chalk-talk <i>Neuronal representations of social memory in mice.</i> Selected Poster <i>Neuronal control of backward walking in Drosophila melanogaster.</i> Rajyashree Sen, Till Bockemühl, Kaiyu Wang, Michael Dübbert, Salil Bidaye, Ansgar Büschges and Barry Dickson. Janelia Junior Scientist Mechanistic Cognitive Neuroscience Workshop (selected), Janelia Research Campus, USA	10/2019
Invited Talk <i>Neuronal control of backward walking in Drosophila melanogaster.</i> IISER Pune, India	08/2019
Selected Poster <i>Neuronal control of backward walking in Drosophila melanogaster.</i> 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	04/2018
Institute Seminar <i>Neuronal control of backward walking in Drosophila melanogaster.</i> Junior Scientist Seminar Series, Janelia Research Campus, USA	05/2018

Graduate Symposium <i>Neuronal control of directed locomotion in Drosophila melanogaster.</i> Janelia Research Campus, USA	09/2015
FLiACT Annual Meeting <i>Neuronal control of directed locomotion in Drosophila melanogaster.</i> KUL, Leuven, Belgium	11/2015
Selected Poster <i>Neural control of directed walking in Drosophila melanogaster.</i> Rajyashree Sen, Salil Bidaye and Barry J. Dickson. Neurobiology of Drosophila Meeting, Cold Spring Harbor Laboratory, USA	10/2013
Selected Poster <i>Neural control of directed walking in Drosophila melanogaster.</i> Emerging Techniques to Map and Functionally Characterize Neural Circuits in <i>Drosophila</i> , Janelia Research Campus, USA	10/2013
FLiACT Annual Meeting <i>Neuronal control of directed locomotion in Drosophila melanogaster.</i> Max Planck Institute of Neurobiology, Germany	04/2013
Selected Poster <i>Antiglycemic and antioxidant effect of mushroom diet.</i> Rajyashree Sen, Diptadip Duttaroy, Ritama Gupta, Priyanka Barman, Srijoni Basu, Sulagna Bhattacharyya and Arup K. Mitra. International Symposium on Plant Biology and Environment: Changing Scenario, XXXI Annual Conference of Indian Botanical Society, University of Allahabad, India	12/2008

PEDAGOGY, TEACHING & MENTORSHIP

Pedagogy <i>Scientists Teaching Science: A course on pedagogy for best practices in STEM education (equivalent to 40 hours of academic instruction)</i> Instructor: Barbara Houtz Janelia Research Campus, USA	01/2017 – 03/2017
Supervision of Research Assistant: Mira Vanchiswar <i>Current: Graduate student at Cornell University, Ithaca</i>	01/2020 – 05/2023
Supervision of Undergraduate: Emily Sun (Columbia University) <i>Current: Research Assistant at Columbia University</i>	01/2021 – 05/2023
Supervision of Undergraduate: Lina Huang (Columbia University) <i>Current: Undergraduate at Columbia University</i>	01/2023 – 04/2023
Supervision of Undergraduate: Delaney Bessel (Franklin & Marshall College)	06/2022 – 08/2023, 01/2023 – 02/2023
Supervision of Summer Undergraduate: Emmanuel Woredokal (Rutgers University), SPURS summer program	06/2021 – 07/2021

WORKSHOPS & INTERNSHIPS

Janelia Junior Scientist Workshop <i>Mechanistic Cognitive Neuroscience (selected)</i> Janelia Research Campus, USA	10/2019
Marie Curie FLiACT Fellow FLiACT workshops	10/2012 – 09/2013
Marie Curie FLiACT Associate FLiACT workshops	10/2013 – 09/2015

Topics: Electrophysiology, Behavioral Assay Design and Data Quantification, Emerging Techniques to Map and Functionally Characterize Neural Circuits in Drosophila, Introductory Workshop on Neural and Behavioral Modeling in Drosophila, Systems Molecular Biology for Neural Circuit Analysis, Conference Presentation Skills

Max Planck Institute for Chemical Ecology, Jena; Max Planck Institute of Neurobiology, Martinsried; KUL, Leuven, Belgium; Center for Genomic Regulation, Barcelona

Summer Internship | Vocational training in Pharmacology and Microbiology
Dey's Medical Stores (manufacturing) Limited, India

06/2009

Internship | The STST Program: 8-Week Skill Set Training Program in Advanced Laboratory Techniques, supported by NSTEDB, Department of Science and Technology, Government of India
St. Xavier's College and R.M. Laboratory, India

01/2008 – 02/2008

REVIEWER

Reviewer | Tomomi Karigo and David Deutsch (2022). "Flexibility of neural circuits regulating mating behaviors in mice and flies" *Frontiers in Neural Circuits*.

MISCELLANEOUS

Hobbies: Science communication, writing, and improv comedy

Merit Scholarship – 2023 New York State Summer Writers Institute, Skidmore College | Advanced Fiction Writing
Skidmore College, New York, USA

07/2023

Finalist | iBiology Young Scientist Seminars Series Competition
<https://www.ibiology.org/meet-the-2020-young-scientist-seminars-winners/>
iBiology & Alan Alda Center for Communicating Science

03/2020

Diversity Scholarship – Upright Citizen's Brigade | Improv Comedy
Upright Citizen's Brigade, New York, USA

10/2019 – 10/2021

Cast | Washington Improv Theater house-team 'Heirloom'
<https://witdc.org/people/rai-sen/>
Washington Improv Theater, Washington DC, USA

05/2018 – 09/2018

Cast | Laugh Index Theater musical improv house-team 'Wonderball'
Laugh Index Theater, Washington DC, USA

08/2016 – 02/2017

Author at ClubSciWri: <http://www.sciwri.club/archives/author/rajyashree-sen>. Studied improv comedy at Washington Improv Theater (Washington DC), Laugh Index Theater (Washington DC), Dojo Comedy (Washington DC), iO (Chicago), Upright Citizen's Brigade (New York), and Magnet Theater (New York). Studied acting at Studio Theater (Washington DC).

REFERENCES

Postdoc advisor: Dr. Richard Axel

Nobel Laureate, 2004

Co-director of Columbia's Zuckerman Institute

Investigator, Columbia University and Howard Hughes Medical Institute

Email: ra27@columbia.edu

Phone: +1 212-853-1010

Ph.D. Thesis advisor: Dr. Barry Dickson

Investigator, University of Queensland, Brain Institute

Email: b.dickson@uq.edu.au

Phone: +61 7-334-66328

Dr. Ansgar Büschges

Investigator, Institute of Zoology, University of Cologne, Germany

Email: ansgar.bueschges@uni-koeln.de

Phone: +49 221-470-2607

Dr. Gwyneth Card

Investigator, Columbia University and Howard Hughes Medical Institute

Email: gc3017@columbia.edu

Phone: +1 212-853-1735 or +1 212-853-1733

Dr. David Stern

Investigator, Janelia Research Campus and Howard Hughes Medical Institute

Email: sternd@janelia.org

Phone: +1 571-209-4237