

**Vikram Gadagkar, PhD**

Howard Hughes Medical Institute Freeman Hrabowski Scholar  
Assistant Professor  
Department of Neuroscience  
Mortimer B. Zuckerman Mind Brain Behavior Institute  
Columbia University

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**Web:** <https://gadagkar.zuckermaninstitute.columbia.edu>

**EDUCATION AND TRAINING:**

2013-2020	Postdoc (Neuroscience)	Cornell University, USA Topic: Neural Mechanisms of Performance Evaluation in Singing Birds Adviser: Prof. Jesse H. Goldberg
2017	Summer Course	Methods in Computational Neuroscience, Marine Biological Laboratory, Woods Hole, MA, USA Course directors: Prof. Michale Fee & Prof. Mark Goldman
2006-2013	Ph.D. (Physics)	Cornell University, USA Thesis: Origin of the Inertial Anomaly in Solid Helium-4: Dislocation Dynamics versus Supersolidity Adviser: Prof. J. C. Seamus Davis
2002-2005	MS (Physics)	Indian Institute of Science, Bangalore, India (Graduated with highest GPA) Thesis: Ab Initio Restricted Hartree-Fock, High Pressure Raman, and Molecular Dynamics Studies on Carbon Nanotubes Adviser: Prof. Ajay K. Sood, FRS
1999-2002	B.Sc. (Physics, Chemistry, Mathematics)	St. Joseph's College, Bangalore University, India (First Class, 2 gold medals)

**POSITIONS:**

2025-present	Howard Hughes Medical Institute Freeman Hrabowski Scholar
2020-present	Assistant Professor, Department of Neuroscience and the Mortimer B. Zuckerman Mind Brain Behavior Institute, Columbia University, USA
2017-2024	NIH K99/R00 Pathway to Independence Fellow
2018-2020	Research Associate, Department of Neurobiology and Behavior, Cornell University, USA
2016-2020	Simons Collaboration on the Global Brain (SCGB) Postdoctoral Fellow
2013-2020	Visiting Scientist, Department of Physics, Cornell University, USA
2013-2018	Postdoctoral Associate, Department of Neurobiology and Behavior, Cornell University, USA
2006-2013	Graduate Research/Teaching Assistant, Department of Physics, Cornell University, USA
2005-2006	Graduate Research Assistant, Department of Physics, Indian Institute of Science, Bangalore, India
1999-2004	Kishore Vaigyanik Protsahan Yojana (KVPY) Fellow, Bangalore, India

**AWARDS, FELLOWSHIPS, AND HONORS:**

2025	Howard Hughes Medical Institute Freeman Hrabowski Scholar
2025	Society for Social Neuroscience Early Career Award
2025	Brain Research Foundation Seed Grant
2025	Researcher of the Month, Columbia University
2025	Sloan Research Fellowship
2025	Grossman-Kavli Scholar Award

- 2023 Klingenstein-Simons Fellowship Award in Neuroscience
- 2023 McKnight Scholar Award
- 2023 Konishi Neuroethology Research Award - International Society for Neuroethology
- 2022 NIH Director's New Innovator Award – DP2
- 2021 Searle Scholar Award
- 2019 American Association for the Advancement of Science AAAS/Science Program for Excellence in Science
- 2018 Peter and Patricia Gruber International Research Award (Society for Neuroscience)
- 2017 K99/R00 Pathway to Independence Award (NIH/NINDS)
- 2017 Organization of Computational Neuroscience (OCNS) Award to attend the *Methods in Computational Neuroscience* course at the Marine Biological Laboratory at Woods Hole
- 2017 William Morton Wheeler Family Founders' Scholarship to attend the *Methods in Computational Neuroscience* course at the Marine Biological Laboratory at Woods Hole
- 2016 Simons Collaboration on the Global Brain (SCGB) Postdoctoral Fellowship
- 2015 Computational and Systems Neuroscience (COSYNE) Presenters Travel Award
- 2011 Douglas Fitch Memorial Travel Award, Department of Physics, Cornell University
- 2011 International Conference in Low Temperature Physics (LT26) Travel Award
- 2011 Cornell University Graduate School Conference Award
- 2006 Cornell Graduate Fellowship, Department of Physics, Cornell University
- 2004 Junior Research Fellowship (JRF) in the National Eligibility Test (NET), Government of India, declined.
- 2002-03 Kumari L. A. Meera Award for the highest CGPA in MS (Physical Sciences), Indian Institute of Science, Bangalore
- 2002 Rhodes Scholarship Finalist
- 2002 Sri B. K. Srinivasa Iyengar Memorial Gold Medal in Mathematics and Chemistry, Bangalore University, India
- 2002 Shikshana Shilpi Shri P. Mallikarjunappa Memorial Gold Medal in Physical Chemistry, Bangalore University, India
- 2002 A. N. Sridhara Prize for the best all-around student in St. Joseph's College, Bangalore University, India
- 2002 Srinivasa Mastay Memorial Prize for Mathematics, St. Joseph's College, Bangalore University, India
- 2002 Phys. Sci. Assoc. Old Students' award for the most outstanding student, St. Joseph's College, Bangalore Univ., India
- 2002 Jaya Krishnan Prize for highest marks in all B.Sc. exams, St. Joseph's College, Bangalore University, India
- 2002 M. V. Jaganath Prize for highest marks in final B.Sc. exams, St. Joseph's College, Bangalore University, India
- 2002 Rev. Fr. Elias D'Souza S. J. Prize for Mathematics, St. Joseph's College, Bangalore University, India
- 2002 Prof. H. S. Srinivasa Rao Prize for highest marks in B.Sc. (PCM), St. Joseph's College, Bangalore University, India
- 2000 Certificate of Excellence in Lecture Competitions, St. Joseph's College, Bangalore University, India
- 1999-02 Awards in 9 science presentation contests and 14 science quizzes at the intercollegiate level in Bangalore, India
- 1999-04 Kishore Vaigyanik Protsahan Yojana (KVPY) Fellowship, Govt. of India
- 2000 Principal's Prize for highest marks in 1<sup>st</sup> year B.Sc. University Exam, St. Joseph's College, Bangalore Univ., India
- 1997 Special Prize for Academic Excellence in the All India Sec. School Exam of Central Board of Secondary Education
- 1997 Awarded the best all-around student in high school (KVIIISc)

## PUBLICATIONS:

\*Co-first authors

#Co-corresponding authors

21. Dopamine for performance evaluation – Insights from songbirds  
**Vikram Gadagkar**  
*Handbook of Behavioral Neuroscience* 32: The Handbook of Dopamine, 275-285 (2025)
20. Natural behavior is learned through dopamine-mediated reinforcement  
 J. Kasdin\*, A. Duffy\*, N. Nadler, A. Raha, A. L. Fairhall, K. L. Stachenfeld and **Vikram Gadagkar**  
*Nature* 641, 699-706 (2025)

This work has been featured in:

*Zuckerman Institute News, Simons Foundation News, UW News*

19. Dopaminergic error signals retune to social feedback during courtship  
A. Roeser\*, **Vikram Gadagkar**<sup>\*\*</sup>, A. Das, P. A. Puzerey, B. Kardon and J. H. Goldberg<sup>#</sup>  
*Nature* (Cover Article) 623, 375-380 (2023)

This work has been featured in:

*Nature Neuroscience, Zuckerman Institute News, Cornell Chronicle, Forbes, Science Daily, Neuroscience News, Earth.com, Nature World News, Phys.org, Mirage News*

18. Dopamine neurons evaluate natural fluctuations in performance quality  
A. Duffy, K. W. Latimer, J. H. Goldberg, A. L. Fairhall<sup>#</sup> and **Vikram Gadagkar**<sup>#</sup>  
*Cell Reports* 38, 110574 (2022)

This work has been featured in:

*Simons Foundation News*

17. Movement signaling in ventral pallidum and dopaminergic midbrain is gated by behavioral state in singing birds  
R. Chen, **Vikram Gadagkar**, A. C. Roeser, P. A. Puzerey and J. H. Goldberg  
*Journal of Neurophysiology* 125, 2219-2227 (2021)
16. How practice makes perfect: dopamine clues from a songbird  
**Vikram Gadagkar**  
*Simons Foundation Newsletter* (2017)
15. Dopamine Neurons Encode Performance Error in Singing Birds  
**Vikram Gadagkar**, P. A. Puzerey, R. Chen, E. Baird-Daniel, A. Farhang and J. H. Goldberg  
*Science* 354, 1278-1282 (2016)

This work has been featured in:

*Science Magazine Perspective, Simons Foundation Newsletter, CornellCast Video, Cornell Chronicle, The Scientist Magazine, Voice of America, Vice Magazine, Science Daily, Cosmos Magazine, Real Clear Life, Science News, Medium, My Science, Cornell Research, Journal of Experimental Biology*

14. A Variability-Generating Circuit Goes Awry in a Songbird Model of the FOXP2 Speech Disorder  
**Vikram Gadagkar** and J. H. Goldberg  
*Neuron* (Preview) 80, 1341-1344 (2013)
13. Generalized Rotational Susceptibility Studies of Solid <sup>4</sup>He  
**Vikram Gadagkar**, E. Pratt, B. Hunt, M. Yamashita, M. J. Graf, A. V. Balatsky, and J. C. Davis  
*Journal of Low Temperature Physics* 169, 180-196 (2012)
12. Interplay of Rotational, Relaxational, and Shear Dynamics of Solid <sup>4</sup>He  
E. Pratt\*, B. Hunt\*, **Vikram Gadagkar**, M. Yamashita, M. J. Graf, A. V. Balatsky, and J. C. Davis  
*Science* 332, 821-824 (2011)

This work has been featured in:

*Nature News Blog, The Kavli Foundation, Los Alamos News, AAAS EurekAlert, Science Daily, Space Daily, Phys.org*

11. Evidence for a Superglass State in Solid <sup>4</sup>He  
B. Hunt\*, E. Pratt\*, **Vikram Gadagkar**, M. Yamashita, A. V. Balatsky, and J. C. Davis  
*Science* 324, 632-636 (2009)

This work has been featured in:

*Science Perspective, Cornell Chronicle, Journal Club for Condensed Matter Physics, Physics World, Physics Today, Questia, Nanowerk*

10. Irreversible pressure-induced transformation of boron nitride nanotubes  
S. Saha, **Vikram Gadagkar**, P. K. Maiti, D. V. S. Muthu, D. Golberg, C. Tang, C. Zhi, Y. Bando, and A. K. Sood  
*Journal of Nanoscience and Nanotechnology* 7(6), 1810-1814 (2007)

9. Double-walled carbon nanotubes under hydrostatic pressure: Raman experiments and simulations  
**Vikram Gadagkar**, S. Saha, D. V. S. Muthu, P. K. Maiti, Y. Lansac, A. Jagota, A. Moravsky, R. O. Loutfy, and A. K. Sood  
*Journal of Nanoscience and Nanotechnology* 7(6), 1753-1759 (2007)
8. Collapse of double-walled carbon nanotube bundles under hydrostatic pressure  
**Vikram Gadagkar**, P. K. Maiti, Y. Lansac, A. Jagota, and A. K. Sood  
*Physical Review B* 73, 085402 (2006)
7. High pressure Raman spectroscopy of double-walled carbon nanotubes  
**Vikram Gadagkar**, S. Saha, D. V. S. Muthu, P. Ramesh, H. Shinohara, R. O. Loutfy, and A. K. Sood  
*Proceedings of the 50th Department of Atomic Energy - Solid State Physics Symposium* (2005)
6. Strains induced in carbon nanotubes due to the presence of ions: *ab-initio* restricted Hartree-Fock calculations  
S. Ghosh, **Vikram Gadagkar**, and A. K. Sood  
*Chemical Physics Letters* 406, 10-14 (2005)
5. Faster development does not lead to correlated evolution of greater pre-adult competitive ability in *Drosophila melanogaster*  
M. Shakarad, N. G. Prasad, K. Gokhale, **Vikram Gadagkar**, M. Rajamani, and A. Joshi.  
*Biology Letters* 1, 91-94 (2005)
4. Communal courtship (?) in the Yellow Wattled Lapwing  
**Vikram Gadagkar**, L. Shyamal, N. V. Arakeri, M. Ramakrishnan, A. Kumar, and G. A. Uday Raghavan  
*Newsletter for Birdwatchers* 39(4), 66-67 (1999)
3. Little Grebe or Dabchick - a new sighting in the Indian Institute of Science campus, Bangalore  
**Vikram Gadagkar**, L. Shyamal, N. V. Arakeri, M. Ramakrishnan, and A. Lahiri  
*Newsletter for Birdwatchers* 39(4), 67 (1999)
2. Blue-throated Flycatcher, Indian Great Reed Warbler, Common Rosefinch and Lesser Golden-backed Woodpecker - four new species in the Indian Institute of Science campus, Bangalore  
**Vikram Gadagkar**, L. Shyamal, M. Ramakrishnan, N. V. Arakeri, S. Venkatesh, A. Lahiri, and A. Hariharan  
*Newsletter for Birdwatchers* 35(4), 69-70 (1995)
1. White-Browed Bulbul - A new sighting in the Indian Institute of Science campus, Bangalore  
**Vikram Gadagkar**, N. V. Arakeri, and M. Ramakrishnan  
*Newsletter for Birdwatchers* 34(4), 96 (1994)

**RESEARCH SUPPORT:**

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|---|--------------|
| 12. Howard Hughes Medical Institute Freeman Hrabowski Scholars Program            | 2025-present |
| 11. Brain Research Foundation Seed Grant  | 2025-present |
| 10. Sloan Research Fellowship   | 2025-present |
| 9. Grossman-Kavli Scholar Award   | 2025-present |
| 8. Klingenstein-Simons Fellowship Award in Neuroscience                           | 2023-present |
| 7. McKnight Scholar Award   | 2023-present |
| 6. Konishi Neuroethology Research Award – International Society for Neuroethology | 2023-2024    |
| 5. NIH Director's New Innovator Award – DP2                                       | 2022-present |
| 4. Searle Scholars Award  | 2021-2024    |
| 3. Columbia University/Zuckerman Institute Startup Funds                          | 2020-present |
| 2. K99/R00 (NIH/NINDS) Pathway to Independence Award                              | 2017-2024    |
| 1. Simons Collaboration on the Global Brain (SCGB) Postdoctoral Fellowship        | 2016-2017    |

**INVITED TALKS:**

86. *Natural Behavior is Learned Through Dopamine-Mediated Reinforcement* 2026  
European Birdsong Meeting, Capo Caccia, Sardinia, Italy.

85. *Neural Mechanisms of Performance Evaluation in Singing Birds* 2026  
Klingenstein-Simons Fellowship Award in Neuroscience Annual Meeting, New York, USA.
84. *Natural Behavior is Learned Through Dopamine-Mediated Reinforcement* 2026  
Physics of Life Symposium organized by Bill Bialek, CUNY Graduate Center, New York, USA.
83. *Natural Behavior is Learned Through Dopamine-Mediated Reinforcement* 2026  
Area Neuroscience Seminar Series, Department of Psychiatry, Columbia University, New York, USA.
82. *Natural Behavior is Learned Through Dopamine-Mediated Reinforcement* 2026  
Encephalon Conference: A Sense of Connection, Columbia Neuroscience Society, New York, USA.
81. *Natural Behavior is Learned Through Dopamine-Mediated Reinforcement* 2026  
COSYNE 2026 Workshop on 'The Neural Code of Action Sequences', Cascais, Portugal.
80. *Natural Behavior is Learned Through Dopamine-Mediated Reinforcement* 2025  
India|EMBO Lecture Course on Neuroethology: How the brain controls natural behaviours, Pune, India
79. *Natural Behavior is Learned Through Dopamine-Mediated Reinforcement* 2025  
Centre for Neuroscience, Indian Institute of Science, Bangalore, India
78. *Natural Behavior is Learned Through Dopamine-Mediated Reinforcement* 2025  
Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, India
77. *Natural Behavior is Learned Through Dopamine-Mediated Reinforcement* 2025  
National Centre for Biological Sciences, Bangalore, India
76. *Natural Behavior is Learned Through Dopamine-Mediated Reinforcement* 2025  
Society for Neuroscience Minisymposium - Emerging Experimental Approaches to Probe Conserved Neurobehavioral Mechanisms Underlying Affiliative and Antagonistic Social Behaviors, San Diego, CA, USA.
75. *Neural Mechanisms of Performance Evaluation in Singing Birds* 2025  
Howard Hughes Medical Institute Freeman Hrabowski Scholars Retreat, Chevy Chase, MD, USA.
74. *Natural Behavior is Learned Through Dopamine-Mediated Reinforcement* 2025  
Society for Social Neuroscience (S4SN) Conference, Lisbon, Portugal (Award Lecture).
73. *Natural Behavior is Learned Through Dopamine-Mediated Reinforcement* 2025  
Howard Hughes Medical Institute Science Meeting, Chevy Chase, MD, USA.
72. *Natural Behavior is Learned Through Dopamine-Mediated Reinforcement* 2025  
Faculty Talk, Zuckerman Institute, Columbia University, New York, USA.
71. *Natural Behavior is Learned Through Dopamine-Mediated Reinforcement* 2025  
Simons Collaboration on the Global Brain Annual Meeting, New York, USA.
70. *Natural Behavior is Learned Through Dopamine-Mediated Reinforcement* 2025  
City University of New York (CUNY), USA.
69. *Natural Behavior is Learned Through Dopamine-Mediated Reinforcement* 2024  
Cold Spring Harbor Laboratory, USA.
68. *Natural Behavior is Learned Through Dopamine-Mediated Reinforcement* 2024  
Swedish Basal Ganglia Society (SWEBAGS) Webinar
67. *Natural Behavior is Learned Through Dopamine-Mediated Reinforcement* 2024  
Neurobiology Seminar Series, Duke University, Durham, USA.
66. *Neural Mechanisms of Performance Evaluation in Singing Birds* 2024  
Ringberg Workshop on Birds and Wires, Max Planck Institute for Biological Intelligence, Germany.
65. *Neural Mechanisms of Performance Evaluation in Singing Birds* 2024  
The Rockefeller University, New York, USA.
64. *Neural Mechanisms of Performance Evaluation in Singing Birds* 2024  
Searle Scholars Program Annual Meeting, Chicago, USA
63. *Neural Mechanisms of Performance Evaluation in Singing Birds* 2024  
Labroots 12<sup>th</sup> Annual Neuroscience Event/NIH BRAIN Initiative

62. *Does Dopamine Guide Vocal Learning?* 2023  
Faculty Talk, Zuckerman Institute, Columbia University, New York, USA.
61. *Neural Mechanisms of Performance Evaluation in Singing Birds* 2023  
Neurobiology and Behavior Graduate Student Bootcamp, Columbia University, New York, USA.
60. *Neural Mechanisms of Performance Evaluation in Singing Birds* 2023  
Max Planck Institute of Animal Behavior and University of Konstanz, Konstanz, Germany.
59. *Neural Mechanisms of Performance Evaluation in Singing Birds* 2023  
New York State Psychiatric Institute, Columbia University Irving Medical Center, New York, USA.
58. *Neural Mechanisms of Performance Evaluation in Singing Birds* 2023  
University of Washington (supported by the HHMI Gilliam Fellowship), Seattle, USA.
57. *Dopamine neurons change their tuning according to courtship context in singing birds* 2023  
University Seminar for the Integrative Study of Animal Behavior, Columbia University, New York, USA.
56. *Does Practice Make Perfect? How the Brain Learns Language in a Social World* 2022  
Brain Insight Lecture, Stavros Niarchos Foundation & Zuckerman Institute, Columbia University, New York, USA.
55. *Neural Mechanisms of Performance Evaluation in Singing Birds* 2022  
Neurobiology and Behavior Graduate Student Bootcamp, Columbia University, New York, USA.
54. *Dopaminergic Reward and Performance Error Signals are Gated During Courtship* 2022  
Dopamine Meeting, Montreal, Canada.
53. *Neural Mechanisms of Performance Evaluation in Singing Birds* 2022  
University of California, San Francisco, San Francisco, USA.
52. *Neural Mechanisms of Performance Evaluation in Singing Birds* 2022  
Learning and Reasoning and Carbon and Silicon Seminar Series, Stanford University, Stanford, USA.
51. *Dopamine Neurons Evaluate Natural Fluctuations in Performance Quality* 2022  
Gordon Research Conference – Basal Ganglia, Ventura, California, USA.
50. *Dopamine Neurons Evaluate Natural Fluctuations in Performance Quality* 2022  
Virtual Songbird Satellite Meeting, USA.
49. *Neural Mechanisms of Performance Evaluation in Singing Birds* 2021  
Princeton Neuroscience Institute, Princeton University, Princeton, USA.
48. *Neural Mechanisms of Performance Evaluation in Singing Birds* 2021  
Simons-Emory International Consortium on Motor Control, Columbia University, New York, USA.
47. *Neural Mechanisms of Performance Evaluation in Singing Birds* 2021  
Neurobiology and Behavior Graduate Student Bootcamp, Columbia University, New York, USA.
46. *Neural Mechanisms of Performance Evaluation in Singing Birds* 2021  
Kleinfeld Group, University of California, San Diego, USA.
45. *Dopamine neurons evaluate natural fluctuations in performance quality* 2021  
ViDA 2021: Virtual Dopamine Conference
44. *Neural Mechanisms of Performance Evaluation in Singing Birds* 2020  
Neurobiology and Behavior Graduate Student Bootcamp, Columbia University, New York, USA.
43. *Neural Mechanisms of Performance Evaluation in Singing Birds* 2019  
Neurobiology and Behavior Graduate Student Bootcamp, Columbia University, New York, USA.
42. *Neural Mechanisms of Performance Evaluation in Singing Birds* 2019  
Department of Physiology, Northwestern University, Chicago, USA.
41. *Neural Mechanisms of Performance Evaluation in Singing Birds* 2019  
Department of Integrative Biology, University of Wisconsin-Madison, Madison, USA.
40. *Neural Mechanisms of Performance Evaluation in Singing Birds* 2019  
Zuckerman Mind Brain Behavior Institute, Columbia University, New York, USA.

39. *Neural Mechanisms of Performance Evaluation in Singing Birds* 2019  
Department of Psychology, University of Chicago, Chicago, USA.
38. *Neural Mechanisms of Performance Evaluation in Singing Birds* 2019  
Department of Biological Sciences and the Neuroscience Institute, Carnegie Mellon University, Pittsburgh, USA.
37. *Neural Mechanisms of Performance Evaluation in Singing Birds* 2019  
Department of Neuroscience, Yale University, New Haven, USA.
36. *Neural Mechanisms of Performance Evaluation in Singing Birds* 2018  
School of Molecular and Cellular Biology, University of Illinois at Urbana-Champaign, USA.
35. *Neural Mechanisms of Performance Evaluation in Singing Birds* 2018  
Department of Psychology, Hunter College, The City University of New York, New York, USA.
34. *Dopamine Neurons Encode Performance Error in Singing Birds* 2017  
Zuckerman Institute, Columbia University, New York, USA.
33. *Dopamine Neurons Encode Performance Quality Relative to Recent Practice in Singing Birds* 2017  
Simons Collaboration on the Global Brain (SCGB) NY-Area Postdoc Meeting, New York, USA.
32. *Dopamine Neurons Encode Performance Error in Singing Birds* 2017  
SPiNES: Seminars from Post-docs in Neuroscience: Extramural Series, New York University, New York, USA.
31. *Dopamine Neurons Encode Performance Error in Singing Birds* 2016  
Birdsong 6 – Integrating neural, social, and evolutionary influences on communication, San Diego, USA.
30. *Dopamine Neurons Encode Performance Error in Singing Birds* 2016  
University of Washington, Seattle, USA.
29. *Dopamine Neurons Encode Performance Error in Singing Birds* 2016  
Simons Collaboration on the Global Brain (SCGB) Annual Meeting, New York, USA.
28. *How Does Practice Make You Perfect? Clues from a Songbird* 2016  
Cornell Undergraduate Society for Neuroscience (CUSN), Cornell University, Ithaca, USA.
27. *Dopamine neurons encode performance quality relative to recent practice in singing birds* 2016  
Neurobiology and Behavior Graduate Student Symposium, Cornell University, Ithaca, USA
26. *Dopamine Neurons Encode Performance Error in Singing Birds* 2015  
Lewis-Sigler Institute for Integrative Genomics, Princeton University, Princeton, USA.
25. *How is Trial and Error Learning Implemented in the Brain?* 2015  
J. C. Séamus Davis Group Meeting, Department of Physics, Cornell University, Ithaca, USA
24. *Dopamine neurons encode performance error in singing birds* 2015  
Neurobiology and Behavior Graduate Student Symposium, Cornell University, Ithaca, USA
23. *Zebra finch ventral tegmental area neurons encode song prediction error* 2015  
COSYNE 2015: Computational and Systems Neuroscience, Salt Lake City, USA
22. *If Zebra Finches Learn Their Song Through Trial and Error, Where is the Error Signal?* 2014  
Centre de Neurophysique, Physiologie et Pathologie, University of Paris Descartes, Paris, France
21. *If Zebra Finches Learn Their Song Through Trial and Error, Where is the Error Signal?* 2014  
Institute of Neuroinformatics, University of Zurich/ETH, Zurich, Switzerland
20. *If Zebra Finches Learn Their Song Through Trial and Error, Where is the Error Signal?* 2014  
Bernstein Center for Computational Neuroscience, Humboldt University, Berlin, Germany
19. *Neural Mechanisms of Trial and Error Learning* 2014  
Biomedical Engineering Society Retreat, Cornell University, Ithaca, USA
18. *If Zebra Finches Learn Their Song Through Trial and Error, Where is the Error Signal?* 2014  
Research Design in the Study of Animal Social Behavior, Department of Neurobiology and Behavior, Cornell University, Ithaca, USA
17. *How Practice Makes You Perfect: Reverse Engineering the Zebra Finch Brain* 2013  
Cornell Electron Devices Society, Cornell University, Ithaca, USA

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| 16. | <i>In Search of 'Actor' and 'Critic' Neurons in the Zebra Finch Song Circuit</i><br>National Centre for Biological Sciences, Bangalore, India  | 2013 |
| 15. | <i>How does Practice Make you Perfect? Insights from the Songbird Brain</i><br>St. Joseph's College, Bangalore, India  | 2013 |
| 14. | <i>Supersolid or a Network of Defects? The Tortuous Story of Solid Helium</i><br>Department of Physics, Indian Institute of Science, Bangalore, India  | 2013 |
| 13. | <i>In Search of 'Actor' and 'Critic' Neurons in the Zebra Finch Song Circuit</i><br>Centre for Neuroscience, Indian Institute of Science, Bangalore, India   | 2013 |
| 12. | <i>In Search of 'Actor' and 'Critic' Neurons in the Zebra Finch Song Circuit</i><br>Research Design in the Study of Animal Social Behavior, Department of Neurobiology and Behavior, Cornell University, Ithaca, USA | 2013 |
| 11. | <i>Supersolid or a Network of Defects? The Tortuous Story of Solid Helium</i><br>Cornell Electron Devices Society, Cornell University, Ithaca, USA   | 2013 |
| 10. | <i>'Supersolid' He-4: A New State of Matter?</i><br>Jawaharlal Nehru Center for Advanced Scientific Research, Bangalore, India   | 2009 |
| 9.  | <i>'Supersolid' He-4: A New State of Matter?</i><br>Department of Physics, Indian Institute of Science, Bangalore, India   | 2009 |
| 8.  | <i>Evidence for a superglass state in solid He-4</i><br>Pizza Talk Summer Series, Department of Physics, Cornell University, Ithaca, USA   | 2009 |
| 7.  | <i>'Supersolid' He-4: A New State of Matter?</i><br>Cornell Electron Devices Society, Cornell University, Ithaca, USA  | 2008 |
| 6.  | <i>Collapse of double-walled carbon nanotube bundles under hydrostatic pressure</i><br>Pizza Talk Summer Series, Department of Physics, Cornell University, Ithaca, USA  | 2008 |
| 5.  | <i>Collapse of double-walled carbon nanotube bundles under hydrostatic pressure</i><br>McEuen Group, Department of Physics, Cornell University, Ithaca, USA  | 2007 |
| 4.  | <i>Fractals - Truth and Beauty</i><br>Part of the "Special aspects of Classical Mechanics" series, Department of Physics, Bangalore University, India  | 2004 |
| 3.  | <i>Natural Selection</i><br>Kendriya Vidyalaya, Indian Institute of Science, Bangalore, India  | 2001 |
| 2.  | <i>Evolution by Natural Selection - Darwin and Beyond</i><br>Bharathi Junior College, Mandya, India  | 1998 |
| 1.  | <i>Evolution by Natural Selection - Darwin and Beyond</i><br>Kendriya Vidyalaya, Indian Institute of Science, Bangalore, India   | 1997 |

**POSTER PRESENTATIONS:**

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| 18. | <i>Neural Mechanisms of Performance Evaluation in Singing Birds</i><br>McKnight Conference on Neuroscience, Aspen, USA.   | 2025 |
| 17. | <i>Neural Mechanisms of Performance Evaluation in Singing Birds</i><br>Klingenstein-Simons Fellowship Award in Neuroscience Annual Meeting, New York, USA.                          | 2025 |
| 16. | <i>Dopamine Guides Vocal Learning Through Reinforcement</i><br>15 <sup>th</sup> International Congress of Neuroethology, Berlin, Germany.   | 2024 |
| 15. | <i>Neural Mechanisms of Performance Evaluation in Singing Birds</i><br>Klingenstein-Simons Fellowship Award in Neuroscience Annual Meeting, New York, USA.                          | 2024 |
| 14. | <i>Evaluating the Actions of Others: Neural Mechanisms of Mate Choice in Female Songbirds</i><br>Searle Scholars Program Annual Meeting, Chicago, USA.                              | 2023 |
| 13. | <i>Dopaminergic Reward and Performance Error Signals are Gated During Courtship</i><br>Gordon Research Conference – Neural Mechanisms of Acoustic Communication, Mount Holyoke, USA | 2022 |
| 12. | <i>Dopaminergic Reward and Performance Error Signals are Gated During Courtship</i><br>Dopamine Meeting, Montreal, Canada.  | 2022 |

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| 11. <i>Evaluating the Actions of Others: Neural Mechanisms of Mate Choice in Female Songbirds</i><br>Searle Scholars Program Annual Meeting, Chicago, USA.                     | 2022 |
| 10. <i>Neural Mechanisms of Performance Evaluation in Singing Birds</i><br>Simons Collaboration on the Global Brain (SCGB) Annual Meeting, New York, USA.                      | 2022 |
| 9. <i>Dopamine neurons evaluate natural fluctuations in performance quality</i><br>SfN 2021: Society for Neuroscience Meeting, Chicago, USA                                    | 2021 |
| 8. <i>Social context-dependent modulation of dopaminergic performance error</i><br>SfN 2018: Society for Neuroscience Meeting, San Diego, USA                                  | 2018 |
| 7. <i>Social context-dependent modulation of dopaminergic performance error</i><br>Birdsong 8: Out on a Limb, San Diego, USA   | 2018 |
| 6. <i>Social context-dependent modulation of dopaminergic performance error</i><br>Bird Song and Animal Communication Annual Meeting, Millbrook, New York, USA                 | 2018 |
| 5. <i>Social context-dependent modulation of dopaminergic performance error</i><br>Simons Collaboration on the Global Brain (SCGB) Annual Meeting, New York, USA.              | 2018 |
| 4. <i>Dopamine neurons encode performance error in singing birds</i><br>SfN 2016: Society for Neuroscience Meeting, San Diego, USA.  | 2016 |
| 3. <i>Interplay of Rotational, Relaxational, and Shear Dynamics of Solid <sup>4</sup>He</i><br>LT26: International Conference on Low-Temperature Physics, Beijing, China       | 2011 |
| 2. <i>Unifying the Rotational, Relaxational, and Shear Dynamics of Solid <sup>4</sup>He</i><br>QFS2010: International Symposium on Quantum Fluids and Solids, Grenoble, France | 2010 |
| 1. <i>High pressure Raman spectroscopy of double-walled carbon nanotubes</i><br>50th Department of Atomic Energy Solid State Physics Symposium, Mumbai, India                  | 2005 |

**WORKSHOPS AND SCHOOLS:**

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|--|-----------|
| 14. Early Career Inclusive Lab Leadership Course, Howard Hughes Medical Institute  | 2025-2026 |
| 13. Faculty Mentor Training – Columbia Center for Teaching and Learning, Zuckerman Institute, Columbia University, USA.                                      | 2025      |
| 12. Faculty Mentor Bystander Intervention Training, Columbia University, USA   | 2024      |
| 11. BRAINYAC Mentor Training, Zuckerman Institute, Columbia University, USA  | 2023      |
| 10. <i>Crawford Bias Reduction Theory &amp; Training (CRBT) – Targeted Lab/Team Intervention</i> , Zuckerman Institute, Columbia University, USA             | 2022-2023 |
| 9. <i>Center for the Improvement of Mentored Experiences in Research (CIMER) Mentor Training for PIs</i> , Zuckerman Institute, Columbia University, USA     | 2022      |
| 8. <i>Crawford Bias Reduction Theory &amp; Training (CRBT)</i> , Zuckerman Institute, Columbia University, USA   | 2021-2022 |
| 7. <i>The PI Crash Course: Skills for Future or New Lab Leaders</i> , Columbia University, USA   | 2020      |
| 6. <i>Methods in Computational Neuroscience</i> , Marine Biological Laboratory, Woods Hole, MA, USA  | 2017      |
| 5. <i>Kodai Summer School in Quantum Mechanics, Statistical Mechanics and Non-Linear Dynamics</i> , Indian Institute of Astrophysics (IIA), Bangalore, India | 2003      |
| 4. 100-hour workshop in <i>Space Sciences</i> conducted by St. Joseph's College, Bangalore University, India   | 2002      |
| 3. 100-hour workshop in <i>Reaction Mechanisms</i> , St. Joseph's College, Bangalore University, India   | 2001      |
| 2. 100-hour workshop in <i>Spectroscopy</i> , St. Joseph's College, Bangalore University, India  | 2000      |
| 1. 100-hour workshop on <i>Human Resource Development</i> , St. Joseph's College, Bangalore University, India  | 2000      |

**LEADERSHIP AND SERVICE:****Conferences and Meetings:**

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|---|------|
| 6. Co-Chair (elected), Gordon Research Conference – Neural Mechanisms of Acoustic Communication | 2026 |
| 5. Discussion Leader, Gordon Research Conference – Neural Mechanisms of Acoustic Communication  | 2024 |

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|----|---|--------------|
| 4. | Co-Vice Chair (elected), Gordon Research Conference – Neural Mechanisms of Acoustic Communication | 2024         |
| 3. | Organizing Member, Zuckerman Institute Gender Inclusion Group (ZIGI)                              | 2021-present |
| 2. | Conference session moderator, Virtual Dopamine (ViDA) Conference: The Future of Dopamine          | 2020         |
| 1. | Co-organized a NeuroDinner event for the Program in Neuroscience, Cornell University              | 2014         |

**Selection Committees:**

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|----|--|--------------|
| 7. | Co-chair, Neurobiology and Behavior Graduate Program Open House, Columbia University           | 2026         |
| 6. | Neurobiology and Behavior Graduate Program, Columbia University                                | 2023-2024    |
| 5. | Zuckerman Institute Postdoc Fellows Program, Zuckerman Institute, Columbia University          | 2023         |
| 4. | Faculty Search Committee, Zuckerman Institute, Columbia University                             | 2021         |
| 3. | Artist Selection Committee, Art in the Education Lab, Zuckerman Institute, Columbia University | 2021 & 2022  |
| 2. | Interviewer for Doctoral Program in Neurobiology and Behavior, Columbia University             | 2021-present |
| 1. | Colloquium committee: Department of Physics, Cornell University                                | 2008         |

**Peer Review:**

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|----|--|--------------------|
| 9. | Reviewer, NIH NPI and SMN Special Session  | 2026               |
| 8. | Reviewer, NIH Director's New Innovator Award – DP2   | 2025               |
| 7. | Member, NIH Neurobiology of Motivated Behavior Study Section                                       | 2023               |
| 6. | Member, NIH/NINDS Special Emphasis Panel on Music and Health                                       | 2022               |
| 5. | Reviewer, Columbia University's Research Initiatives in Science and Engineering (RISE) Competition | 2020-2021,<br>2026 |
| 4. | Abstract Reviewer, Computational and Systems Neuroscience (Cosyne)                                 | 2017               |
| 3. | Review Panelist, National Science Foundation (NSF) Graduate Research Fellowship Program (GRFP)     | 2016               |
| 2. | Reviewed honors thesis for Biological Sciences Honors Program, Cornell University                  | 2015 & 2016        |
| 1. | Reviewed grant proposals for Sigma Xi Cornell University Chapter                                   | 2015 & 2016        |

**Journal Review:**

*Nature, PNAS, Current Biology, Journal of Neuroscience, Progress in Neurobiology*

**Panelist:**

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|----|--|-------------|
| 6. | Faculty Panel, Encephalon Conference: A Sense of Connection, Columbia Neuroscience Society, New York, USA.   | 2026        |
| 5. | Career panel moderator, Columbia University Neurobiology and Behavior Graduate Student Retreat, Glen Cove, USA.                                      | 2024        |
| 4. | STEMPeers panel on Early Career Research in Academia: Know What to Expect, Philadelphia, USA   | 2022        |
| 3. | Postdoc-Faculty Coffee Chat, Zuckerman Institute, Columbia University, USA   | 2021        |
| 2. | Panelist for Columbia Access Neuroscience (CAN) – a program for students from underrepresented backgrounds in neuroscience, Columbia University, USA | 2021 & 2022 |
| 1. | Panelist for the Yale Neuroscience Career Panel, Department of Neuroscience, Yale University, USA  | 2021        |

**PhD Thesis Committee:**

- |    |   |              |
|----|---|--------------|
| 5. | Ishani Ganguly (Behnia and Abbott Labs), Zuckerman Institute, Columbia University | 2024-present |
| 4. | Ryan Schwark (Abdus-Saboor lab), Zuckerman Institute, Columbia University         | 2024         |
| 3. | Ching Fang (Abbott & Aronov labs), Zuckerman Institute, Columbia University       | 2023-2024    |
| 2. | John Lindsey (Litwin-Kumar lab), Zuckerman Institute, Columbia University         | 2022-2024    |
| 1. | Yow-Tyng Yeh (Woolley lab), Zuckerman Institute, Columbia University              | 2021-2022    |

**PhD Qualifying Exam Committee:**

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|----|---|------|
| 3. | Ishani Ganguly (Behnia and Abbott Labs), Zuckerman Institute, Columbia University | 2022 |
| 2. | John Lindsey (Litwin-Kumar lab), Zuckerman Institute, Columbia University         | 2021 |
| 1. | Ching Fang (Abbott & Aronov labs), Zuckerman Institute, Columbia University       | 2021 |

**External PhD Thesis Committee:**

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|----|--|--------------|
| 1. | Xueqian Ma (Hahnloser lab), ETH Zurich | 2024-present |
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**MEMBERSHIPS:**

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|----|--|----------------|
| 7. | International Society for Neuroethology                    | 2023 – present |
| 6. | Society for Social Neuroscience (S4SN)                     | 2023 - present |
| 5. | Dopamine Society, Founding Member                          | 2022 - present |
| 4. | American Association for the Advancement of Science (AAAS) | 2019 - present |
| 3. | Sigma Xi, The Scientific Research Society                  | 2018 - present |
| 2. | Organization for Computational Neurosciences (OCNS)        | 2018 - present |
| 1. | Society for Neuroscience (SfN)                             | 2015 - present |

**TEACHING AND MENTORING:****Courses:**

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|-----|--|-----------|
| 14. | Topics in Sensorimotor Control supported by NIH T32 (Lecture on Reinforcement Learning in the Songbird)  | 2026      |
| 13. | UN3005 Neurobio II: Devpt & Systems, Columbia University (Guest Lecture on Reinforcement Learning in Songbirds)  | 2023-2024 |
| 12. | BMSC-GA-4463: Readings in Neuroscience, New York University (Guest Faculty)  | 2022      |
| 11. | MUSI AV4000 – <i>Music, Math, and Mind</i> , Columbia University (Guest Lecture on How Practice Makes Perfect – Dopamine Clues from a Songbird)                            | 2022-2025 |
| 10. | E3B GR6450 – <i>Ethology and the Evolution of Behavior</i> , Columbia University (Guest Lecture on Song Learning and Dopamine)   | 2021-2022 |
| 9.  | PS 521/NE 521 – <i>Animal Models in Behavioral Neuroscience</i> , Boston University (Guest Faculty)  | 2020      |
| 8.  | Academic Application Boot Camp, Columbia University (Lecture on How to Write an Effective Research Statement and Session on Research Statement Live Q&A)                   | 2020      |
| 7.  | NB&B GR6055 – <i>Survey Neuroscience II</i> , Columbia University (Lecture on Motor Performance in Songbirds)  | 2020-2026 |
| 6.  | BIONB 2220 – <i>Introduction to Neuroscience</i> , Department of Neurobiology and Behavior, Cornell University (Guest Lecture on Basal Ganglia and Reinforcement Learning) | 2016      |
| 5.  | PHYS 1101 – <i>General Physics I</i> , Department of Physics, Cornell University (Teaching Assistant)  | 2012      |
| 4.  | PHYS 1117 – <i>Concepts of Modern Physics</i> , Department of Physics, Cornell University (Grader)   | 2008      |
| 3.  | PHYS 208 – <i>Fundamentals of Physics II</i> , Department of Physics, Cornell University (Teaching Assistant)  | 2008      |
| 2.  | PHYS 101/102 – <i>General Physics I/II</i> , Department of Physics, Cornell University (Teaching Assistant)  | 2007      |
| 1.  | PHYS 208 – <i>Fundamentals of Physics II</i> , Department of Physics, Cornell University (Teaching Assistant)  | 2007      |

**Postdocs:**

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|----|---|--------------|
| 3. | Brian Frost, Zuckerman Institute, Columbia University   | 2026-present |
| 2. | Logan Thomas, Zuckerman Institute, Columbia University  | 2025-present |
| 1. | Keshav Suresh, Zuckerman Institute, Columbia University | 2024-present |

**Graduate Students:**

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|----|---|--------------|
| 5. | Arnav Raha, Zuckerman Institute, Columbia University    | 2024-present |
| 4. | Nathan Nadler, Zuckerman Institute, Columbia University | 2023-present |
| 3. | Jessica Burke, Zuckerman Institute, Columbia University | 2022-present |

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|----|---|--------------|
| 2. | Hannah Chen, Zuckerman Institute, Columbia University     | 2021-present |
| 1. | Jonathan Kasdin, Zuckerman Institute, Columbia University | 2020-present |

**Postbacs:**

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|----|--|--------------|
| 5. | Alexis Yagielski, Zuckerman Institute, Columbia University | 2025-present |
| 4. | Malavika Eswaran, Zuckerman Institute, Columbia University | 2023-present |
| 3. | Amanuel Sahilu, Zuckerman Institute, Columbia University   | 2022-2025    |
| 2. | Arnav Raha, Zuckerman Institute, Columbia University       | 2021-2023    |
| 1. | Jessica Burke, Zuckerman Institute, Columbia University    | 2020-2021    |

**Undergraduate Students:**

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|-----|---|-----------|
| 11. | Hannah Nunes, Zuckerman Institute, Columbia University ( <a href="#">HHMI Cech Fellows Program</a> )  | 2026      |
| 10. | Kayla Davis, Zuckerman Institute, Columbia University ( <a href="#">Leadership Alliance Program</a> ) | 2023      |
| 9.  | D’Juan Moreland, Zuckerman Institute, Columbia University ( <a href="#">NIH U-RISE Program</a> )      | 2023      |
| 8.  | Aditi Borde, Zuckerman Institute, Columbia University   | 2023      |
| 7.  | Malavika Ramarao, Department of Neurobiology and Behavior, Cornell University                         | 2019-2020 |
| 6.  | Archana Podury, Department of Neurobiology and Behavior, Cornell University                           | 2016-2018 |
| 5.  | Alexander Farhang, Department of Neurobiology and Behavior, Cornell University                        | 2014-2015 |
| 4.  | Eliza Baird-Daniel, Department of Neurobiology and Behavior, Cornell University                       | 2013-2015 |
| 3.  | Praveen Narayanan, Department of Physics, Cornell University  | 2011      |
| 2.  | Neal Harrington, Department of Physics, Cornell University  | 2011      |
| 1.  | James McArdle, Department of Physics, Cornell University  | 2011      |

**High School Students:**

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|----|---|------------|
| 2. | Evan Gilliam, Zuckerman Institute, Columbia University ( <a href="#">BRAINYAC Program</a> )   | 2025, 2026 |
| 1. | Aminata Diallo, Zuckerman Institute, Columbia University ( <a href="#">BRAINYAC Program</a> ) | 2023-2024  |

**Visiting Students:**

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|----|--|------|
| 1. | Xueqian Ma, ETH Zurich (Hahnloser Lab) | 2023 |
|----|--|------|

**OUTREACH/PODCASTS/INTERVIEWS:**

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|-----|---|------|
| 19. | Brain Series Lecture at The Marmara, hosted by Merve Gursel and Zuckerman Institute, Columbia University, New York, USA.  | 2026 |
| 18. | Interview for The Lab – Improv Comedy Inspired by Real Science, hosted by Rai Sen and Company, Magnet Theatre, New York, USA.   | 2026 |
| 17. | Lab tour for Columbia Access Neuroscience (CAN) – a program for students from underrepresented backgrounds in neuroscience, Columbia University, USA  | 2024 |
| 16. | Jazz Meets Neuroscience with Terri Lyne Carrington, Zuckerman Institute, Columbia University, New York, USA   | 2024 |
| 15. | The Song and Dance of Neurons – Science Talk and Interpretive Dance with neuroscientist and dancer Sloka Iyengar for STEMPeers, Philadelphia, USA   | 2022 |
| 14. | <a href="#">Jazz Listening Party with Miguel Zenon – Instrumental Mastery and Neuroscience</a> , Zuckerman Institute, Columbia University, New York, USA  | 2021 |
| 13. | <a href="#">Sound Waves and Brain Waves: Birdbrains and Love Songs</a> – episode with Jazz Artist in Residence Miguel Zenon, Zuckerman Institute, Columbia University and Northern Manhattan Arts Alliance (NoMAA), New York, USA | 2021 |
| 12. | <a href="#">Scientific Sense Podcast with Gill Eapen</a>  | 2021 |
| 11. | Featured in <i>Journey of the Early Career Scientist</i> – hosted by the Mortimer B. Zuckerman Mind Brain Behavior Institute, Columbia University, New York, USA  | 2020 |

10. Selected to speak at the inaugural SPARK talks - Scholars Present About Research and Knowledge, on *How does practice make you perfect? Clues from a songbird*, Cornell University Library, Cornell University, Ithaca, USA 2015
9. Co-organized a workshop *Play or get played: game theoretic ideas in animal behavior* for Expanding Your Horizons: Motivating Young Women in Science+Mathematics, Cornell University, Ithaca, USA 2015
8. Co-organized a series of popular science lectures for students and the public through Looking Around: Students' Group for Interdisciplinary Interactions, Indian Institute of Science, Bangalore, India 2005
7. Conducted a city-wide science quiz for undergraduates at St. Joseph's College, Bangalore University, Bangalore, India 2004
6. Conducted a science quiz for students awarded the National Science Fellowship (KVPY) at the Indian Institute of Science, Bangalore, India 2004
5. Conducted a science quiz for students awarded the National Science Fellowship (KVPY) at the Indian Institute of Science, Bangalore, India 2003
4. Conducted the 13<sup>th</sup> annual Smt. Mrudula Vaidya City Wide Science Quizzes for high school students at the Indian Institute of Science, Bangalore, India 2002
3. Conducted the 12<sup>th</sup> annual Smt. Mrudula Vaidya City Wide Science Quizzes for high school students at the Indian Institute of Science, Bangalore, India 2001
2. Conducted the 11<sup>th</sup> annual Smt. Mrudula Vaidya City Wide Science Quizzes for high school students at the Indian Institute of Science, Bangalore, India 2000
1. Conducted the 10<sup>th</sup> annual Smt. Mrudula Vaidya City Wide Science Quizzes for high school students at the Indian Institute of Science, Bangalore, India 1999