

RICHA ARYA, Ph.D.

aryaricha@bhu.ac.in

Assistant Professor and Ramalingaswami Fellow, Cytogenetics Laboratory, Department of Zoology, Institute of Science, Banaras Hindu University, Varanasi 221 005, India

CURRENT POSITION

12/2019- till Date Assistant Professor, Cytogenetics Laboratory, Department of Zoology, Banaras Hindu University, Varanasi 221 005, India

PROFESSIONAL EXPERIENCE

09/ 2017-12/2019 Ramalingaswami-Reentry Fellow, Dr. B. R. Ambedkar Center for Biomedical Research (ACBR), University of Delhi, Delhi, India

02/2017-06/2017 Instructor in Dermatology, at Massachusetts General Hospital, Harvard Medical School, 149, 13th street, CBRC, Charlestown, 02129 MA, USA

2009- 2017 Postdoctoral fellow, at Massachusetts General Hospital, Harvard Medical School, 149, 13th street, CBRC, Charlestown, 02129, MA, USA.

ADMINISTRATIVE RESPONSIBILITIES

A. Instrument Core Incharge

2011- 2017 Confocal core co-ordinator at CBRC, MGH, USA

B. Curriculum Development

2018-2019 Curriculum Development for M.Sc Biomedical Sciences elective course on Stem Cell Biology for developmental and translational research (MBSEC-402), Delhi University

2019 Working Group Member of Under-Graduate Curriculum revision of Human Genetics Course (Code 325879903 in Programme (CBCS) B.SC.(hons)) Biomedical Science, Delhi University

C. Grant Reviewing Activities

2019- Reviewed DST- major grant, Department of Science and technology (DST), India

D. Workshops organized

1. 2018, 19-21st February, in the **Abstract Committee** , of 11th Symposium on Frontiers in Biomedical Research organized by Dr. B. R. Ambedkar Center for Biomedical Research (ACBR), University of Delhi, Delhi, India

2. 2018, 5-7 December, **Co-Organizer**, *National workshop on Hands-on Training in Molecular Techniques in Biotechnology* was organized to give the women students a practical training of molecular biology tools. The workshop was held at Sri Tikaram Kanya Mahavidyalaya, Aligarh as an extension activity in collaboration with ACBR University of Delhi.

EDUCATION/TRAINING (Reverse chronological)

DEGREE	INSTITUTION AND LOCATION	YEAR(s)
Ph.D.	Department Of Zoology, Banaras Hindu University, Varanasi, India	2003-2009
M.Sc.	Department of Zoology, Aligarh Muslim University, Aligarh, India	2000-2002
B.Sc.	Dr. Bhimrao Ambedkar University, Agra India	1997-2000
Intermediate	Allahabad Board, UP	1996
High School	Allahabad Board, UP	1994

HONORS AND AWARDS

2019	International travel award from DST India to attend 6th European Drosophila Research Conference(EDRC) 2019, Switzerland
2009	MGH CBRC Jerome Gross Travel Award, USA
2007	Awarded by Prof. V. C. Shah prize for best paper presentation in All India Cell Biology Conference, India
2006-2009	Senior Research Fellowship (SRF),by CSIR-UGC .
2003	Qualified GATE in 2003.
2003	Qualified Junior Research Fellowship (JRF) by ICMR , India.
2003-2006	Qualified Junior Research Fellowship (JRF) test conducted by CSIR-UGC .
2000-2002	Awarded Postgraduate Merit Scholarship by Aligarh Muslim University (AMU),India.

INNOVATION (DISCOVERED TWO TECHNIQUES)

- Munnalal, Tiwari S., Rajesh, Singh A, Singh J.N., **Arya R.**, Akanksha and Lakhotia S. C. (2008) A simple and economical device to save water in water distillation systems in laboratories. *Curr. Sci.* 95:438.
- Arya R.** and Lakhotia S. C. (2006). A simple nail polish imprint technique for examination of external morphology of Drosophila eyes. *Curr. Sci.* 90:1179-1180.

CLASSROOM TEACHING AND EVALUATION

Taught following Courses and practical to the Masters and Ph.D students in Biomedical Science, at ACBR, Delhi University

2017- Semester I	Basic course in concepts of Genetics(MBS-105), Theory/Practical (level of effort 10hr)
2018- Semester IV	Special Course: Genome Biology(MBS-402), Theory/Practical (level of effort 10hr)
2019- Semester I	Basic course in concepts of Genetics (MBS-105), Theory/Practical (level of effort 30hr)
2019- Ph.D course work	CRISPER-Cas9 genome editing tools (PHBS-4)

Teaching Zoology at BHU, Varanasi 2019 till today

BSc. Semester III	ZOB 301: Basic Genetics and Evolution & Developmental Biology (level of effort 4 hr)
BSc. Semester VI	Behavior genetics (level of effort 4 hr)
MSc Semester III	ZOM 303E: MOLECULAR AND HUMAN GENETICS (level of effort 12 hr)

RESEARCH FUNDING

2013-2014	MGH ECOR Fund for Medical Discovery (FMD) Postdoctoral Fellowship research grant, USA. This is one of the most prestigious postdoctoral grants given by MGH, USA. I have received it for my project on studies on cell death regulation. Title: Genetic and epigenetic regulation of neural stem cell death in Drosophila Grant size: \$62,560 Duration: August 1, 2013 – July 31, 2014 Funding agency: MGH ECOR Fund for Medical Discovery (FMD) Postdoctoral Fellowship research grant, USA Achievements: Published a part of research
2017-2022	Ramalingaswami-Reentry Fellowship, DBT, India (BT/RLF/Re-entry/30/2015) Title: Genetic and epigenetic regulation of stem cell death and its consequences in cancer Grant size: Rs. 32,00,000 + 55,50,000 (salary) Duration: September 1, 2017 – August 31, 2022 Funding agency: Department of Biotechnology India
2019-2022	DST_ECR_SERB Research funding, DST, India (ECR/2018/002837) Title: Understanding the molecular basis of the interaction between stem cell niche and the fate of stem cells Grant size: Rs. 45,90,696 Duration: July 29 2019- for three years Funding Agency: Department of Science and technology

PUBLICATIONS

Publications as Ramalingaswami Fellow

- Original paper **Arya R.**, Gyonjyan S., Harding K., Sarkissian T., Li Y., Zhou L., White. K. (2019) A Cut/cohesin axis alters the chromatin landscape to facilitate neuroblast death. *Development*.146 ([doi: 10.1242/dev.166603](https://doi.org/10.1242/dev.166603))
- Chapter Akanksha Verma, Malavika E. Santhosh, **Richa Arya*** (2019) Drosophila neural stem cells, a primer for understanding mammalian neural development and disease. Insights into Human Neurodegeneration: Lessons Learnt from Drosophila ed. Mousumi Mutsuddi, *Springer Nature Singapore Pte Ltd.* (ISBN:978-981-13-2218-1) (* Corresponding author)

Postdoctoral Publications

- Original paper Sarkissian T., **Arya R.**, Gyonjyan S., Taylor J.B., White. K. (2016) Cell death regulates muscle fiber number. *Dev Bio.* 415(1):87-97. ([doi: 10.1016/j.ydbio.2016.04.018](https://doi.org/10.1016/j.ydbio.2016.04.018))
- Original paper **Arya R.**, Sarkissian T., Tan Y., White. K. (2015) Neural stem cell progeny regulate stem cell death in a Notch and Hox dependent manner. *Cell death and diff.* 22(8):1378-87. ([doi:10.1038/cdd.2014.235](https://doi.org/10.1038/cdd.2014.235))
- Review **Arya R.**, White. K (2015). Cell death in development: Signaling pathways and core mechanisms. *Sem. Cell & Dev Biol.* 39:12-9 ([doi:10.1016/j.semcdb.2015.02.001](https://doi.org/10.1016/j.semcdb.2015.02.001))
- Review Sarkissian T., Timmons A., **Arya R.**, Abdelwahid, A., White. K. (2014) Detecting apoptosis in Drosophila tissues and cells. *Methods* 68:89-96. ([doi:10.1016/j.ymeth.2014.02.033](https://doi.org/10.1016/j.ymeth.2014.02.033))
- Original paper Tan Y., Mabuchi Y.M., **Arya R***, Pierre S. S., Tang W., Tosa M., Brachmann C. and White K. (2011). Coordinated expression of cell death genes regulates neuroblast apoptosis. *Development* 138: 2197-2206. [***second author**] ([doi: 10.1242/dev.058826](https://doi.org/10.1242/dev.058826))

PhD Publications

- Original paper **Arya R.**, Nisha A., and Lakhota S. C (2010). Hsp60D - A novel modifier of polyglutamine-mediated neuro degeneration in Drosophila. *Annals of Neurosciences* 17: 8-17. ([doi: 10.5214/ans.0972.7531.2010.170104](https://doi.org/10.5214/ans.0972.7531.2010.170104))
- Original paper **Arya R.** and Lakhota S. C (2008). Hsp60D is essential for caspase-mediated induced apoptosis in Drosophila melanogaster. *Cell Stress and Chaperons* 13: 509-526. ([doi: 10.1007/s12192-008-0051-3](https://doi.org/10.1007/s12192-008-0051-3))
- Review **Arya R.**, Mallik M. and Lakhota S. C (2007). Heat shock genes- integrating cell survival and death. *J. Biosci.* 32: 595-609. ([DOI:10.1007/s12038-007-0059-3](https://doi.org/10.1007/s12038-007-0059-3))
- Innovation **Arya R.** and Lakhota S. C. (2006). A simple nail polish imprint technique for examination of external morphology of Drosophila eyes. *Curr. Sci.* 90:1179-1180. (<http://www.iisc.ernet.in/currsci/may102006/1179.pdf>)
- Chapter Sarkar S., **Arya R.**, and Lakhota S. C.(2006). Chaperonins in life and death. In: Stress Response: A molecular biology approach. (A.S. Sreedhar ed.) Research Sighpost Publication, India. ([ISBN: 81-308-0109-4](https://doi.org/10.1007/978-81-308-0109-4))

Contribution to Science education

- Munnalal, Tiwari S., Rajesh, Singh A, Singh J.N., **Arya R.**, Akanksha and Lakhota S. C. (2008) A simple and economical device to save water in water distillation systems in laboratories. *Curr. Sci.* 95:438. ([http://www.bhu.ac.in/science/zoology/scan paper/Munnalal et al Water distillation device CURRENT SCIENCE 2008_47.pdf](http://www.bhu.ac.in/science/zoology/scan%20paper/Munnalal%20et%20al%20Water%20distillation%20device%20CURRENT%20SCIENCE%202008_47.pdf))
 - Tomar R and **Arya R** (2007). DNA fingerprinting. *Science Reporter*, 44: 26-29.
 - **Arya R.** (2002). Allergy- The Inside Story. *Science Reporter*, May, 25-27. (article in science magazine)
-

RESEARCH FOCUS

Developmental Biology, genetics and epigenetics				
Apoptosis/cell death	Stem cells	Neural circuits	Proliferations	Quiescence

INVITED SPEAKER/ CONFERENCE ORGANIZATION/ PRESENTATIONS

A. Invited Speaker

1. 2020, Aug 18, online webinar at Narayana medical college, Chintareddypalem, Nellore, Andhra Pradesh, Biosafety and laboratory criteria for COVID-19.
2. 2019, July 16, at Banaras Hindu University, Varanasi, U.P. India, Genetic and epigenetic regulation of developmental apoptosis in drosophila neural stem cells.
3. 2018, Jan 19, at Miranda College, Delhi, India. *Event: National Symposium cum Faculty Development Programme on Genome editing tools and applications.* Title of the talk: *Genome Engineering in Drosophila using CRISPR as a tool.*
4. 2018, May 25, at Shiv Nadar University, Greater Noida, U.P India. Event : CRISPR/Cas9 workshop at SNU, May 24-28 2018. Title of the talk: In vivo Genome engineering in Drosophila melanogaster using array of CRISPR tools.
5. 2017, Dec12-13, **Resource Person**, Vallabhbhai Patel Chest Institute, Delhi, India. National workshop on Advancement in Immunology. Facilitator for teaching and hands on training of molecular cloning.
6. 2014, Jan, 30, in Drosophila meeting at Harvard medical school, Boston, USA, Title of talk: *Intrinsic and extrinsic signals activate neural stem cell apoptosis through coordinated cell death gene expression.*
7. 2013, Dec 19, University of IAR, Gandhinagar, India. Title of the talk: *Genetic and epigenetic regulation of cell death.*
8. 2011, Mar 16, Invite talk at Harvard medical school, Boston USA to present research at DRB Data-Journal Club at Developmental and Regenerative Biology (DRB) program. Title of the talk: *Neurogenesis in drosophila cell death mutants.*

C. Conference Oral Presentation

- 3rd Indian Drosophila research conference, Dec 6-9, 2017, IISER Bhopal, India **Talk:** Regulation of the cell death fate of neural stem cells
 - Drosophila Research conference, March 4-8 ,2015, Chicago, USA. **Talk:** Neural stem cell progeny regulate stem cell death in Notch and Hox dependent manner
 - Young Researchers Conclave (YRC)-IIT Gandhinagar, Dec-27-28, 2013, IIT Gandhinagar, India **Talk:** Presented a short talk on my post-doctoral research and future goals
 - Drosophila Research conference, March 3-7 ,2013, Washington DC, USA. **Talk:** Regulation of life and death in Drosophila neural stem cells.
 - fly meeting, 2014, at MGH/ Harvard Medical School, Boston, USA, **Talk:** Intrinsic and extrinsic signals activate neural stem cell apoptosis through coordinated cell death gene expression
 - Developmental and regenerative Biology, teaching program. Student and postdoc data club presentation. May 2011, MGH/ Harvard Medical School, Boston, USA, **Talk:** Neurogenesis in Drosophila cell death mutants.
-