# Curriculum Vitae
# Anuradha Singh


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**Educational Qualifications:**

- **January 2016 – May 2021: Completed PhD.** in Neuroscience under the supervision of Dr. Kavita Babu from **Indian Institute of Science Education and Research**. Mohali, India. The Topic of my research is "Understanding the role of DOP-2, a dopamine autoreceptor, in ethanol dependent locomotion of Caenorhabditis elegans".
- **2013-2015: First Class (89%)** in Masters of Science (Molecular and Human Genetics), Banaras Hindu University, Varanasi, Uttar Pradesh, India.
- **2009-2012: First Class (72%)** in Bachelor of Science from C.S.J.M. Kanpur University, Kanpur, Uttar Pradesh, India.

**Research Experience:**

- **January 2016 – May 2021.** PhD. Research Scholar at IISER Mohali under the guidance of Dr. Kavita Babu. Received UGC-JRF. Pursuing my research on project entitled "**DOP-2 modulates Acetylcholine and GABA signaling in *Caenorhabditis elegans.***" During these studies we found a very interesting behaviour and utilized it for the delineation of synaptic dopamine signalling through dopamine receptor, DOP-2 and showed that EIS behaviour is the direct outcome of increased dopamine levels. We showed that PDE neuron synapses onto DVA interneuron where NLP-12 (a neuropeptide) and DOP-1 (Dopamine receptor) are the two molecules important for movement regulation through motor neuron. Interestingly, it is quite distinct from the anterior dopamine circuitry that functions extra-synaptically to control various behaviours. Moreover, EIS behaviour can be used to screen for array of chemicals/conditions those can enhance the dopamine signalling. Our manuscript creates a paradigm for future studies where post withdrawal effects of this chronic ethanol exposure will be understood. Furthermore, transgenerational effects of chronic ethanol exposure will be studied by performing genome wide transcriptome analysis and the knowledge generated can be utilized to overcome AUDs in humans.

**Publications from the above work:**

Pandey, P., **Singh, A**., Kaur, H., Ghosh-Roy, A. and Babu, K. (2021). Increased dopaminergic neurotransmission results in ethanol dependent sedative behaviors in Caenorhabditis elegans. PLoS GENETICS (in press).

Ethanol Induced Sedative (EIS) Behavior Assay, to determine increased Dopamine and Acetylcholine defects in *C. elegans*. Protocol Accepted in Bio protocol, April 2021.

**January – May 2015.** Dissertation under the guidance of Dr. Ashim Mukharjee, Department of Molecular and Human Genetics, Banaras Hindu University on the project entitled "Structural and Functional Study of Notch Binding Protein in *Drosophila Melanogaster*."

**May – July 2014.** Summer Training under the guidance of Dr. Debasmita Upadhyay, Biological Sciences, National Institute of Science Education and Research (NISER) on the project entitled "Genetic Association Studies of Factor V Leiden and G6PD With Recurrent Spontaneous Abortion in North Indian Population".

**May - June 2011.** Summer Training on the project entitled "Electrophoresis for Varietal Identification of Pisum Sativum", from C.S.A. University of Agriculture and Technology.

**Research Expertise:**

***C. elegans*** forward and reverse genetics**,** molecular biology**,** neurobiology, fluorescence microscopy, confocal microscopy, calcium imaging, worm transformation, other basic worm techniques.

**Molecular Techniques:** Protein Extraction, SDS PAGE, Western Blotting, RNA Extraction, cDNA Preparation, RT PCR, Real time PCR, Denaturing PAGE, Immunoprecipitation.

Basic Techniques used in Drosophila, Immunostaining, In-situ Hybridization, FISH, Cloning, Mass Spectroscopy.

**Conferences And Workshops Attended:**

- EMBO Conference on Molecular Neuroscience: From genes to circuits in health and disease Feb 2019 NCBS, presented poster on "DOP-2, Dopamine autoreceptor affects the locomotor behavior of C. elegans in an ethanol dependent manner".
- DOP-2, Dopamine autoreceptor affects the locomotor behavior of *C. elegans* in an ethanol dependent manner. Poster presentation at the 2nd Indian *C. elegans* Meeting and Workshop held in NII, New Delhi, India from Feb 2018.
- GIAN Couse and Workshop on "Conservation and Evolution of Developmental Gene Regulatory Networks: A Systemic View", held at IISER Mohali, November 2017.
- GIAN Couse and Workshop on "Cognition: an interdisciplinary perspective", held at IISER Mohali, August 2016.
- AISSQ 2014, Banaras Hindu University.
- Seminar on Emerging Frontiers And Challenges In Biotechnology, presented poster on Genetically Modified Crops, Feb 2012.
- National workshop on studies in Environmental Analysis – Feb 2012.

**Fellowships:**

- UGC-CSIR-NET-2015 qualified (National level test) conducted by Council of Scientific and Industrial Research, Delhi, India.
- Obtained Department of Biotechnology fellowship given by the Government of India for pursuing studies leading to Masters of Science degree in Molecular and Human Genetics Department, B.H.U.

**Publications:**

**1.Co-author**
**Pandey, P., Singh, A., Kaur, H., Ghosh-Roy, A. and Babu, K. (2021). Increased dopaminergic neurotransmission results in ethanol dependent sedative behaviors in *Caenorhabditis elegans*. PLoS GENETICS (in press).**

**2.Joint second author**
**Pratima Pandey, Umer S. Bhat, Anuradha Singh, Aishwarya Joy, Varun Birari, Nagesh Y. Kadam and Kavita Babu (2021); Dauer formation in *C. elegans* is modulated through AWC and ASI dependent chemosensation. eNeuro 2021 (Accepted).**

**3. Anuradha Singh, Pratima Pandey and Kavita Babu. Ethanol Induced Sedative (EIS) Behavior Assay, to determine increased Dopamine and Acetylcholine defects in *C. elegans*. Protocol Accepted in Bio protocol, April 2021.**