



Assistant Professor

Dr. Lipi Buch

School of Science

Qualifications

BSc, MSc, PhD

- PhD in Zoology; Specialisation Neurobiology (2019) from The Maharaja Sayajirao University of Baroda, Vadodara
- MSc in Biotechnology (2012) from Bharati Vidyapeeth University, Pune
- BSc in Zoology (2010) from The Maharaja Sayajirao University of Baroda, Vadodara

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Areas of Expertise

Neurobiology, Glial Cell Biology, Animal Cell Culture, Cell Biology, Molecular Biology

Profile

My PhD was focussed on understanding the 'Role of Astrocytic MeCP2 in the regulation of CNS myelination'. MeCP2 is an epigenetic protein mainly found in neurons, however, many recent studies have reported its presence in the glial cells- oligodendrocytes and astrocytes. The purpose of my work was to study the involvement of this protein in the event of myelination, particularly with respect to astrocytes. Astrocytes are not directly involved in myelination, however, they are involved in secretion of a large number of growth factors and other molecules which influence the biology of myelination.

Research Interest

My research interest is to understand the interaction and inter-relationship of neuronal and glial cells particularly astrocytes and oligodendrocytes, which is important to facilitate the functioning of both these cell types as well as carry out some of the major developmental events like myelination. I am also interested in elucidating the molecular mechanisms in the pathological condition of glioblastoma multiforme (GBM), a fast-growing glioma or tumour of the brain, by exploring the involvement of various miRNAs in the progression and sustenance of this disease. These areas are studied using tools of molecular biology and cell culture biology.

Awards and Recognitions

- Senior Research Fellow (SRF): September 2015 - September 2016, Department of Biotechnology (DBT), Govt. of India funded research project
- Junior Research Fellow (JRF): September 2013 - September 2015, Department of Biotechnology (DBT), Govt. of India funded research project
- DBT-CTEP Travel Grant award to attend the 25th Biennial meeting of the International Society of Neurochemistry (ISN) and Asian Pacific Society of Neurochemistry (APSN), Cairns, Australia, August 2015
- Prof. T. Desiraju award (First Prize) for best poster presentation at the 28th Annual Meeting of Society For Neurochemistry, India (SNCI)
- Best poster presentation (Second Place) at the ICRED-SRBCE conference, January 2019.

Publications

Total Number of Publications: 10 | Total Citations: 34 | h-index: 3 | i10-index: 0

- Lipi, B., Jaldeep, L., & Prakash, P. (2018). Role of astrocytic MeCP2 in regulation of CNS myelination by affecting oligodendrocyte and neuronal physiology and axo-glial interactions. *Experimental brain research*, 236(11), 3015-3027. (IF: 1.878)
- Langhnoja, J. M., Buch, L. K., & Pillai, P. P. (2018). 17 β -estradiol modulates NGF and BDNF expression through ER α mediated ERK signaling in cortical astrocytes. *Biologia*, 73(9), 907-915. (IF: 0.728)
- Langhnoja, J., Buch, L., & Pillai, P. (2021). Potential role of NGF, BDNF, and their receptors in oligodendrocytes differentiation from neural stem cell: An in vitro study. *Cell biology international*, 45(2), 432-446. (IF: 1.747)
- Pillai, V., Kadu, R., Buch, L., & Singh, V. K. (2017). Derivatives of Dapsone (dap): Synthesis and Study on In Vitro Anticancer Activity and DNA Laddering against Hep G2 and C6 Human Cancer Cell Lines. *Chemistry Select*, 2(16), 4382-4391. (IF: 1.716)
- Pillai, V., Buch, L., Desai, A., & Singh, V. K. (2017). Derivatives of 4, 4'-Oxydianiline Show Distinct In Vitro Cytotoxicity, Apoptosis Induction, and Selectivity against HepG2 Cancer Cells. *Chemistry Select*, 2(35), 11581-11589. (IF: 1.716)
- Pillai, V., Patel, S. K., Buch, L., & Singh, V. K. (2018). Binuclear diphenyltin (IV) dithiocarbamate complexes bearing functionalized linkers: Synthesis, spectral characterization, DFT and in vitro anticancer activity. *Applied Organometallic Chemistry*, 32(12), e4559. (IF: 3.581)
- Singh, V. K., Pillai, V., Patel, S. K., & Buch, L. (2019). Improving Cytotoxicity by Changing a Linker from Diphenylether to Diphenylmethane and now to Phenylene in Binuclear Dithiocarbamate Complexes: Synthesis and Cytotoxicity Study. *ChemistrySelect*, 4(29), 8689-8699. (IF: 1.716)
- Singh, V. K., Pillai, V., Gohil, P., Patel, S. K., & Buch, L. (2018). New binuclear dithiocarbamate complexes [M $_2$ - μ_2 -bis-((k $_2$ S, S-S $_2$ CN (R) CH $_2$ CONHC $_6$ H $_4$) 2CH $_2$)](M= NiII, CuII, and ZnII): synthesis, characterization, DFT, and in vitro cytotoxic study. *Journal of Coordination Chemistry*, 71(22), 3689-3707. (IF: 1.685)
- L Buch, J Langhnoja, P Pillai. 2015/8/1. 'Role of astroglial Methyl-CpG-binding protein 2 in central nervous system myelination.' *JOURNAL OF NEUROCHEMISTRY proceedings*, Volume 134, Pages 283-283, Publisher WILEYBLACKWELL (IF: 4.870)
- J Langhnoja, L Buch, P Pillai. 2015/8/1. 'Modulatory effects of tumor necrosis factor α on neurotrophins in myelinating spinal cord and dorsal root ganglion cultures.' *JOURNAL OF NEUROCHEMISTRY proceedings*, Volume 134, Pages 201-201, Publisher WILEYBLACKWELL (IF: 4.870)

Workshops/Conferences Attended

- National Workshop on 'Techniques in Molecular and Cellular Endocrinology' at Dr. ALM Post Graduate Institute of Basic Medical Sciences, University of Madras, Taramani Campus, Chennai.
- Abstract entitled '17?- estradiol modulates neurotrophins expression through its classical receptors in rat cortical Astrocytes' presented at the 32nd International conference on Recent trends in Biomedical Sciences & Annual meeting of SRBCE at Holy Cross College, Trichy, T.N. India
- Poster presentation entitled 'Role of Methyl-CpG-Binding-Protein 2 (MeCP2) in impaired mitochondrial functions in glial cells' presented at the 28th Annual Meeting of Society For Neurochemistry, India (SNCI), Chennai, T.N, India
- Poster presentation entitled 'Effect of TNF-? on neurotrophins during myelination in myelinating spinal cord culture' presented at the 28th Annual Meeting of Society for Neurochemistry, India (SNCI), Chennai, T.N., India
- Poster presentation entitled, 'Cellular mechanism underlying modulatory effects of 17?- estradiol in neurotrophins expression in rat cortical astrocytes' presented at the 33rd Annual Meeting of the Society for Reproductive Biology and Comparative Endocrinology (SRBCE), Davangere University, Karnataka, India.
- Poster presentation entitled, 'Role of Astroglial Methyl-CpG-Binding Protein 2 in Central Nervous System Myelination' presented at the 25th Biennial meeting of the International Society of Neurochemistry (ISN) and Asian Pacific Society of Neurochemistry (APSN), Cairns, Australia.
- Poster presentation entitled, 'Modulatory Effects of Tumor Necrosis Factor ? on neurotrophins in Myelinating Spinal Cord and Dorsal Root Ganglion cultures' presented at the 25th Biennial meeting of the International Society of Neurochemistry (ISN) and Asian Pacific Society of Neurochemistry (APSN), Cairns, Australia.
- Poster presentation entitled, 'Role of astrocytic MeCP2 in the regulation of central nervous system myelination' presented at the 34th Annual Meeting of Indian Academy of Neurosciences, National Brain Research Centre, Manesar, India.
- Poster presentation entitled, 'Cross-talk between Insulin Receptor and Neurotrophins in neural stem cells differentiation' presented at the 34th Annual Meeting of Indian Academy of Neurosciences, National Brain Research Centre, Manesar, India.
- Poster presentation entitled, 'Involvement of astrocytic MeCP2 in the regulation of CNS myelination' presented at the International Conference on Reproduction, Endocrinology and Development (ICRED) & 37th Annual Meeting of Society of Reproductive Biology and Comparative Endocrinology (SRBCE), Navrachana University, Vadodara, India.

Workshops and Conferences Organised

- Organising committee member of 'International Conference on Reproduction, Endocrinology and Development (ICRED)' in association with BOGS (Baroda Obstetric & Gynecological Society) and under the aegis of SRBCE (Society for Reproductive Biology and Comparative Endocrinology), 18th to 21st, January 2019, organised by School of Sciences, held at Navrachana University, Vadodara.
- Organising committee member of Three-day symposium on 'Brainstorming breakthroughs and challenges in Neuroscience' by Prof. Vibhakar Kotak, Visiting Faculty for Neuroscience, School of Science, NUV (9th to 11th January 2020).
- Organising committee member of 'International Conference on Eco-health and Environmental Sustainability (ICEES)' in association with University of Calgary, 24th to 26th February 2020, organised by School of Science, held at Navrachana University, Vadodara.

- Organising committee member of 'International Conference on Public Health (ICPH-2021) under the aegis of 'Navrachana University Centre for Public Health & Biomedical Science' in association with the University of Arizona, Tucson, Arizona, 24th to 26th March 2021, held at Navrachana University, Vadodara.

Memberships

- Member of Placement Cell of Division of Biomedical and Life Sciences, working in close association with Training and Placement Cell of the University.
- Mentor at the Global Connect Summer School which consisted of students from NUV as well as from China and USA. (June to August 2020).
- Member of Admission Committee at Division of Biomedical and Life Sciences.

