

Dr. Isan K Patro

M.Phil, Ph.D., FIAN, FCINP, FNASc.

Vice Chancellor

Ravenshaw University

Cuttack 753 003, Odisha

Phone: +91-6712200160

Mob: +91-9425110063/ 9425110064

ishanpatro@gmail.com

Professor (On lien)
School of Studies in Zoology/ Neuroscience
Jiwaji University, Gwalior 474 011, India

D-14, Garden Homes Phase-I
Alkapuri, Gwalior 474006
Phone: +91-751-2343063
Mob: +91-9425110063

CURRICULUM VITAE

EDUCATION:

Kurukshetra University, Kurukshetra

Ph.D.: 1986; Ph.D. thesis: Influence of centrophenoxine on the neuronal ipofusciniin ageing and senile rats: A histochemical study

M.Phil.: 1982; Zoology with Distinction in dissertation

M.Sc.: 1981; Zoology

Utkal University, Bhubaneswar

B.Sc. (H): 1978; Zoology Hons. with distinction

CURRICULA DEVELOPMENT:

1. M.Sc. Neuroscience: Developed a M.Sc. Neuroscience programme for the first time at any Indian University. Leading to establishment of India's 1st University Teaching Department of Neuroscience.
2. Bioinformatics Centre: Established the Bioinformatics Centre with Department of Biotechnology, Govt. of India support at Jiwaji University, Gwalior

HONOURS:

1. Fellow of the National Academy of Sciences, India (FNASc.)
2. Fellow of the Collegium Internationale Neuro-Psychopharmacologicum (FCINP)
3. Fellow of the Indian Academy of Neurosciences (FIAN)

AWARDS:

1. K.T. Shetty Memorial Oration of the Indian Academy of Neurosciences, 2012.
2. Defence Research and Establishment Award (Best Paper Award for Biological Sciences) 2010
3. A.V. Tilak Award of the Association of Gerontology (India) for the best research paper- 1988
4. Department of Biotechnology Incentive Awards for Publication- 2014 to Biotechnology Information Facility, Jiwaji University, Gwalior for getting the 3rd position in the category of BIF (Universities) for publication of papers in the journals of high repute in the year 2013. I am the Coordinator of the Facility.
5. Late Prof. R.K Shrivastava Memorial Oration, Indian Science Congress Association (Sagar Chapter), 2017
6. B.K. Bachhawat Life-Time Achievement Award of Indian Academy of Neurosciences in the year 2018.

SCHOLAR INDICES:

h-index: 22
i-10 index: 35
citations: 1156
Research Gate Score: 31.84

GRANTS:

National Initiative:

Project Coordinator, DBT National Initiative on Glial Cell Research in Health and Disease, Department of Biotechnology, Govt. of India. Participating Institutes: CCMB, CDRI, JNU, JU, NBRC and NIMHANS

Research Fellowships:

1. ICMR Junior Research Fellowship (17.7.81- 20.3.84)
2. ICMR Senior Research Fellowship (21.3.84- 4.5.85)
3. ICMR Research Associateship (5.5.85- 31.12.86)
4. UGC Research Associateship (4.2.87- 4.12.87)
5. DST Young Scientist Project (5.12.87- 2.1.89)

Research Projects Completed: 12 (ICMR=2, DST=4, DBT=6)

Research projects in hand: 02 (ICMR, DBT)

RESEARCH SUPERVISION:

Ph.D. Awarded=26; Working = 08; M.Phil. Awarded = 06

RESEARCH EXPERIENCE:

36 years

RESEARCH PUBLICATIONS:

80

TEACHING EXPERIENCE:

28 years; Post-graduate

POST-DOCTORAL STUDY ABROAD:

1. Worked at the MRC Neurochemical Pathology Unit, Newcastle as Biotechnology Overseas Associate during 1st March 1996 to 28th February 1997.
2. Worked at 1st Institute of Anatomy, University of Cologne, Cologne, Germany during 1st December 2000 to 28th February 2001 as INSA-DFG exchange of Scientist Fellow

VISITING LECTURER:

Visiting Lecturer in the MRC Neurochemical Pathology Unit, School of Neuroscience and Psychiatry, University of Newcastle upon Tyne, Newcastle, 1996-97.(From 1st March, 1996 until 28th February, 1997)

VISITS ABROAD ON SCIENTIFIC PURPOSES:

1. Univ. of **Newcastle upon Tyne, UK**
2. University of Queensland, **Australia**
3. Nat. Univ. of Singapore, **Singapore**
4. Univ. of Cologne, **Cologne**, Germany

LIFE MEMBERSHIPS:

National Academy of Sciences, India
Indian Academy of Neuroscience
Indian Science Congress Association
Association of Gerontology (India)
Society of Toxicology (India)
Indian Society of Cell Biologists

INDIAN ACADEMY OF NEUROSCIENCE: Dean (2008-2011); Vice-President (1999-2001, 2005-2008); General Secretary (2001-2005)

MEMBERSHIP IN EDITORIAL BOARDS:

1. Member, Editorial Board, Proceedings National Academy of Sciences (India). Published by NASI through Springer-Nature
2. Member, Editorial Board of the Journal 'Ageing and Society' published by Calcutta Metropolitan Institute of Gerontology, Calcutta.
3. Advisor, Editorial Board, 'Toxicology International' published by Society of Toxicology, India

CONFERENCE, SYMPOSIA, WORKSHOP, ETC. ATTENDED:

National: 27; International: 16; Workshop/Training Courses attended:13

AWARDS TO DR. PATRO'S STUDENTS/ CO-INVESTIGATOR WHERE HE IS AN AUTHOR:

1. Dr. Nisha Patro: '**Jyotsnamayee Raghunath Bhattacharya Prize**' for Best Paper published in 2009-10 by the Indian Academy of Neurosciences.
2. Dr. Kapil Saxena: '**Professor S. S. Parmar Research Foundation Award**' for **best poster presentation** at 22nd Annual Conference of Indian Academy of Neurosciences at Hyderabad Central University, Hyderabad (6th – 8th May 2004).
3. **Mr. Amit: 'Professor S. S. Parmar Research Foundation Award**' for **best poster presentation** in International Conference on Recent Advances in Neuroscience and 27th Annual Meeting of Indian Academy of Neuroscience, Jaipur (18th -20th Dec 2009).
4. Mr. Rakesh Kumar Banote: **Best Oral presentation** in National Conference on Herbal Medicine held at Bharthiyar University, Coimbatore (8-9th Sept 2010).
5. Miss Arpita Sharma: **Organiser's award for Best Poster presentation** in the 5th Congress of FAONS and 28th Annual Meeting of the Indian Academy of Neurosciences (IAN) held at IITR, Lucknow (25th -28th Nov 2010).
6. Mrs. Surya Tripathi: '**Best Poster presentation in FAONS Satellite Symposium** on Glial Cells in Health and Disease' held at School of Studies in Neuroscience, Jiwaji University, Gwalior (30th Nov -1st Dec 2010)
7. Miss Arpita Sharma: '**Best Poster presentation in 98th Indian Science Congress**' held at SRM University, Chennai (3rd -7th Jan 2011).
8. Mr. Naik Aijaz '**Best Paper for Poster Award from Indian Society of Cell Biology**' at 40thAll India Cell Biology Conference, Gwalior (17th -19th Nov 2016)
9. Ms. Shrstha Sinha '**Swarana Jayanti Puraskar for Best poster paper presentation from National Academy of Sciences India**' at 86thAnnual Session of Academy, Dehradun (2nd- 4thDec2016)
10. Dr. Arpita Sharma '**Jyotsnamayee Raghunath Bhattacharya Prize**'for Best Paper published in 2016 by the Indian Academy of Neurosciences.
11. Ms. Shrstha Sinha '**Swarana Jayanti Puraskar for Best oral paper presentation from National Academy of Sciences India**' at 87thAnnual Session of Academy, Pune (8th – 10th Dec 2017)

DETAILS OF SERVICE CAREER

Institution	Position	Period (From- To)	Area of research
Fellowships			
Kurukshetra University	Junior Research Fellow (ICMR)	17.7.81- 20.3.84	Neurobiology of Aging
	Senior Research Fellow (ICMR)	21.3.84- 4.5.85	
	Research Associate (ICMR)	5.5.85- 31.12.86	
	Research Associate (UGC)	4.2.87- 4.12.87	
	Principal Investigator (DST/YS)	5.12.87- 2.1.89	
Service as a Faculty			
Jiwaji University	Lecturer	3.1.89- 26.7.98	
	Reader	27.7.98- 26.7.06	
	Professor	27.07.06- Cont.	

DST/YS= Department of Science & Technology Young Scientist Project;
ICMR= Indian Council of Medical Research; UGC= University Grants Commission

- Teaching experience: 28 years
- Research Experience: 36 years

ADMINISTRATIVE EXPERIENCE OF PROF. I.K. PATRO

S. No.	Post	Academic Position held	Organisation/ University	Duration		Experience (In Years & Months)
				From	To	
1.	Head of the Department	Coordinator-Head, School of Studies in Neuroscience	Jiwaji University, Gwalior	2000 2015	2012 Contd.	17 Yrs
		Coordinator, Centre for Genomics		2012	2015	
		Coordinator, DBT- BIF Bioinformatics Centre		2006	Contd.	
		Head, School of Studies in Zoology		2014	2017	
2.	Member, Faculty of Life Sciences	Life Sciences	Jiwaji University	2000	Contd.	17 Yrs
3.	Expert Member, Faculty of Science	Science	Dayalbag Edu. Institute, Agra	2017		1 Yr
4.	Chairman, Board of Studies	Neuroscience	Jiwaji University	2009	2014	5 Yrs
		Mol. Human Genetics		2014	2016	3 Yrs
		Zoology		2014	2016	3 Yrs
5.	Chairman, Central UG Board of Studies, MP State	Zoology	Madhya Pradesh Higher Edu.	2014	2017	3 Yrs
6.	Members, Board of Studies	Zoology	Jiwaji University	2008	2011	3 Yrs
7.	Members, Board of Studies	Zoology	MS Univ., Barodra	2009	2013	4 Yrs
8.	Members, Board of Studies	Life Sciences	Sikkim Manipal University	2009	2009	1 yr
9.	Members, Board of Studies	Zoology	Dayalbag Edu. Institute, Agra	2015		1 yr
10.	Members of Academic Council	Member	Jiwaji University	2009	2016	7 Yrs
11.	Expert Member of the Research Development Committee	Expert Member	Bundelkhand University, Jhansi	2017	2017	1 Yr
12.	National Academy of Sciences (India) Fellowship Scrutiny	Expert Member	National Academy of Sciences	2016 2017		2 Yrs

	Committee		(India)			
13.	National Academy of Sciences (India) Membership Scrutiny Committee	Expert Member	National Academy of Sciences (India)	2017		1 Yr
14.	Student Counsellor of the University	Counsellor	Jiwaji University	2008	2011	4 Yrs
15.	Edited the University's Information Bulletin (2002-05)	Editor	Jiwaji University	2002	2005	4 Yrs
16.	Member of the Admission Committee for admissions to all academic programmes of the University	Member	Jiwaji University	2008	2016	8 Yrs
17.	Member, Committee for developing the Vision Document of JU	Member	Jiwaji University	2008		1 Yr
18.	Member, Committee for developing the Ph.D. Ordinance	Member	Jiwaji University	2008		1 Yr
19.	Has been the Centre Superintendent of Examinations	Centre Superintendent	Jiwaji University	2000	2016	16 Yrs
20.	Has been the Jt. Proctor of the University	Jt. Proctor	Jiwaji University	1994		1 Yr
21.	Coordinator for the NAAC Team visited in 2002. Developed the Self-assessment document of the University as Coordinator	Coordinator	Jiwaji University	2002		1 Yr
22.	Developed the X Plan Grant Application of the University with the then VC and coordinated the	Coordinator	Jiwaji University	2003		1 Yr

	visit of UGC expert team for assessment of the University for support					
23.	Developed proposals for funding like the proposal for establishment of Institute of Advanced Technology and all documents related to the University for presentation to HE the President of India and Hon'ble Prime Minister during their visit to the University	Coordinator	Jiwaji University	2003	2004	2 Yrs
24.	Member of the Examination Flying Squared	Member	Jiwaji University	2000	2017	17 Yrs
25.	Chairman/ Member of several Scrutiny Committees for evaluating and recommending affiliation of various colleges	Member/ Chairman	Jiwaji University	2005	2017	12 Yrs
26.	Member of Organizing Committee of the Convocations of the University	Member	Jiwaji University	2003	2017	14 Yrs
27.	Coordinator/ Member for organizing UGC-NET and other competitive exams in the Campus	Memeber	Jiwaji University	2009	2014	5 Yrs

DETAILS OF MOBILIZATION OF FUNDS BY PROF. I. K. PATRO

Total funds mobilized since 1989= Rs. 809.943 Lakhs

SI No.	Title of Project	Funding Agency	Amount (Rs.) Lakhs	Date of sanction and Duration
Ongoing Research Projects				
1.	Role of Neuroinflammation in brain aging and frailty	Indian Council of Medical Research , Govt. of India, New Delhi	Rs. 42.52	2014-2017
Ongoing Grants				
2.	DBT-HRD Support Neuroscience	Department of Biotechnology , New Delhi	Rs. 310.76	Since 2004
3.	DBT- Bioinformatics Facility	Department of Biotechnology , New Delhi	Rs. 57.512	Since 2006
Projects completed				
4.	Influence of certain geroprotectors on neuronal ageing in environ-mentally stressed and ageing albino rats	Department of Science and Technology , New Delhi	2.3	1989-90
5.	Experimental manipulation of longevity, lipofuscin formation and neuron loss in mouse brain	Department of Science and Technology , New Delhi	12.092	21.10.1995
6.	Studies on role of microglial activation in neuronal apoptosis	Department of Biotechnology , New Delhi	29.26	31.3.2004
7.	Studies on immunophilin ligands as novel modulators of glial activity and mediators of neuroprotection	Department of Science and Technology , New Delhi	17.86	30.6.2006
8.	Role of microglia in adult neurogenesis	Department of Biotechnology , New Delhi	62.73	June 2006, 4yrs.
9.	Aging of microglia (Principal Investigator: I.K. Patro)	Indian Council of Medical Research , Govt. of India, New Delhi	35.711	2007 3 Years
10.	Phenotypic alterations in astroglia and microglia in the brain- in response to tuberculous pathology in association with HIV/AIDS	Department of Biotechnology , Govt. of India, New Delhi	14.74	2008-2009
11.	Influence of early neurotoxic exposure on structural and	Department of Science & Technology , Govt. of India, New Delhi	15.48	2009-2012

	cognitive aspects of cerebellum at adulthood and senility (PI: Dr. Nisha Patro)			
12.	Impact of maternal exposure to deltamethrin during gestation on cerebellar organization and cognitive development of the new born	Indian Council of Medical Research , Govt. of India, New Delhi	36.56	2011-2014
13.	Neuroimmunological and cognitive implications of perinatal bacterial (Lippoploysaccharide) infection during aging	Department of Biotechnology , Govt. of India, New Delhi	57.94	2012- 2016
14.	Perinatal viral infection neuroimmunological, molecular and cognitive consequences during development adulthood and senility in mice	Department of Biotechnology , Govt. of India, New Delhi	33.80	2012- 2015
15.	Impact of maternal protein malnutrition on the genesis, differentiation and maturation of astrocytes and oligodendrocytes (National initiative on glial cell research in health and disease)	Department of Biotechnology , Govt. of India, New Delhi	80.68	2012- 2016

RESEARCH SUPERVISION

Ph.D. Awarded=26; Working = 08; M.Phil. Awarded = 06

S.No.	Name of the Student	Title of the Thesis
AWARDED		
1.	Dr. Suresh Kumar Bhardwaj (1996)	Influence of citiolone on age-related changes in mouse spinal cord and spinal ganglia
2.	Dr.Praveena Singhal (1996)	Formation and removal of lipofuscin and its role in neuron loss in brainstem of ageing mice
3.	Dr.Munmun Chattopadhyay (1997)	Effect of flunarizine on ageing and injured neurons
4.	Dr. Manisha Bajpai (2006)	Studies of neurodegenerative changes following facial nerve transection
5.	Dr. Vandana Shrivastava (2006)	Influence of flunarizine on pyrethroids induced developmental neurotoxicity
6.	Dr. Kapil Saxena (2008)	Studies on the impact of FK506 on central glial response following peripheral nerve injury
7.	Dr. Sarika Kushwah (2009)	Age related changes in astrocytes and microglia in the hippocampus and striate cortex
8.	Dr.AnchalGusain (2009)	Studies on the potential role of calcineurin in cerebral ischemia/reperfusion injury
9.	Dr. Meghna Saxena (2010)	Studies on influence of deltamethrin on glial responses during postnatal development of rat cerebellar cortex
10.	Dr. Pawan Kumar (2010)	Therapeutic properties of <i>Spirulina plantesis</i> in collagen induced arthritis (CIA) in rats
11.	Dr. Mohsin Khan (2011)	Therapeutic and prophylactic potential of certain antiviral compounds and recombinant vaccine candidates against chikungunya virus
12.	Dr. Gunjan Saxena (2011)	Role of cholinergic system and mitochondria in caspase mediated apoptotic cell death in the experimental models of dementia
13.	Dr. Biswajit Mishra (2012)	Design, synthesis and evaluation of peptide based antimicrobial compounds therapeutics against multidrug resistant strains
14.	Dr. Rekha Dhanwani (2012)	Studies on basic patho-biology of chikungunya virus: Implications of oxidative stress and related pathways in chikungunya pathogenesis
15.	Dr. Surya Tripathi (2013)	Astroglia and microglial alteration in human brain disorders
16.	Dr. Amit (2013)	Studies on the influence of neuroinflammation on neurodegeneration and neuroregeneration in a rat model of viral encephalitis
17.	Dr. P. Vijayabhaskar (2013)	Deltamethrin developmental neurotoxicity in cerebral cortex
18.	Dr. S. Swarnkar (2013)	Cellular and molecular studies on the rotenone induced neurotoxicity
19.	Dr.Kamendra Kumar (2014)	Influence of maternal exposure to Deltamethrin during gestation on postnatal development rat cerebellum
20.	Dr. Arpita Sharma (2014)	Influence of Minocycline on bacterial endotoxin lipopolysaccharide induced neuroinflammation associated cerebral degeneration

21.	Dr. Shashi Sharma (2014)	Molecular detection and characterization of novel swine flu virus
22.	Miss. Divyasha Saxena (2014)	Molecular detection and characterization of west Nile virus
23.	Mrs. Raj Priya (2014)	Studies on neuropathogenesis and hostpathogen interaction of novel ECSA chikungunya virus genotypes with and without A226V mutation
24.	Mr. Shashank Tiwari (2014)	Aging changes in glia and its impact on neuroprotection following peripheral nerve injury
25.	Miss Aarti Nagayach (2015)	Glial changes in STZ induced diabetic rat brain
26.	Mr. Aljaz Naik	Studies on the impact of intra-generational protein malnutrition on gliogenesis and cognitive abilities in rats
Working		
27.	Mrs. Kavita Singh	Impact of early life bacterial (LPS) infection on developing and aging brain
28.	Mr. Brijendra Singh	Viral infection and glial response in rat brain
29.	Ms. Shrstha Sinha*	Genesis and recruitment of microglia in developing rat brain
30.	Ms. Archana Sahu*	In silico drug design for neurodegenerative disorders
31.	Ms. Tiyasha Sarkar*	Efficacy of Minocycline in a 3-hit model of schizophrenia
32.	Mr. Sayed Mujtaba*	Studies on impact of protein malnutrition and deltamethrin on cerebellar development
33.	Ms. Urmila*	Protein malnutrition and bacterial infection: Impact on the peri-neuronal net in rat brain
34.	Mrs. Neha Sharma*	Glial activation following environmental stress in Zebrafish
* = Final RDC approval awaited. They have qualified the Ph.D. entrance test of Jiwaji University		

CONFERENCES, WORKSHOPS, ETC. ORGANIZED

1. National Symposium on Biology of Ageing, 29th-31st October, 1993 (Organizing Secretary)
2. National Conference on Gerontology and Symposium on Molecular Markers of Ageing, 7th-9th April, 1997 (Jt. Secretary)
3. National Symposium on Frontiers of Neuroscience, 8th December, 1997 (Organizer)
4. 'Neuroscience 2000 and Beyond': 17th Annual Conference of Indian Academy of Neurosciences, Annual Meeting of Neuroscience Society of India, National Symposium on Cellular and Molecular Basis of Brain Function, 6th-8th December 1999 (Organizing Secretary)
5. 'World Brain Awareness Week 2000' at Gwalior, 13th -19th March, 2000 (Coordinator)
6. 'World Brain Awareness Week 2001' at Gwalior, 12th -18th March, 2001 (Coordinator)
7. Seminar on 'Planning and Presentation of Research Proposals' 10th August, 2001 (Organizing Secretary)
8. 'Neuroscience: From Basic to Clinic' 23rd Annual Conference of Indian Academy of Neurosciences, 28th-30th January, 2005 (Organizing Secretary)
9. National Symposium on 'Glial Neurobiology' 23rd October, 2007 (Organizing Secretary)
10. Satellite Symposium of the 5th Congress of Federation of Asian-Oceanian Neuroscience Societies on 'Glial Cells in Health and Disease, November 30 – December 01, 2010 (Organizing Secretary)
11. Lecture Series on "Visual Perception and Memory" with Prof. Thomas David Albright, Director, Vision Centre Laboratory, The Salk Institute for Biological Studies, La Jolla, California, USA, 28th June to 1st July 2011 (Organizing Secretary)
12. Science Academies' Lecture Workshop on "Translational Research In Life Sciences: Towards Improvement of Health", 27th to 29th October 2014 (Convenor)
13. National Conference on Recent Advances in Zoology, May 4-5, 2015 (Head of the Department)
14. XL All India Cell Biology Conference 2016 to be held at Jiwaji University, Gwalior during November 17-19, 2016 (Convenor)
15. DBT- Brainstorming Session on Glial Cell Research in Health and Disease under the National Initiative on Glial Cell Research, February 2-3, 2017 (Convenor)
16. DBT-AIST International Laboratory for Advanced Biomedicine (DAILAB) programme Platform for Innovating Knowledge to International Know How (PIKNIKH) on Biomedicine and Biotechnology Oriented Original Technology Highlights, May 5-6, 2017 (Convenor)

Workshops

17. Workshop on Morphometric Evaluation of Brain for Neurotoxicological Studies, 3rd-5th December, 1999 (Organizing Secretary)
18. Short-term Training Workshop on Cloning and Expression of Animal Genes, 15th July – 4th August, 1997 (Coordinator)
19. National Training Workshop on State of the Art Techniques in Cell and Molecular Biology, 7th-16th August, 1997 (Coordinator)
20. Sixth Neuroscience Society of India Workshop on Techniques in Neuroscience, 8th-20th December, 1997 (Course Organizer)
21. National Seminar cum Workshop on "Applications of Bioinformatics in Life sciences", 8th, 9th March, 2013 (Convenor)
22. Professional Development Workshops: Writing your research paper: 1. From idea to final publication and 2. An overview of research ethics, 29th, 30th October 2013 with Prof. M.J. Zigmond and Prof. Beth Fischer (Convenors); (Coordinator)
23. Behaviour Analysis and Basic Neurophysiology Techniques. A Satellite Programme of 35th Annual Meet of Indian Academy of Neurosciences, 25th October, 2017 (Convenor)

LIST OF PUBLICATIONS OF PROF. I.K. PATRO (As on 1st June 2018)

Papers published in peer-reviewed journals:

1. Sinha, Shrsttha, Patro, Nisha, Patro, I.K. (2018) Maternal protein malnutrition: Current and future perspectives of spirulina supplementation in neuroprotection. *Front. Neurosci.*, DOI: doi.org/10.3389/fnins.2018.00966
2. Baghel, M.S., Singh, B., Dhuriya, Y.K., Shukla, R.K., Patro, N., Khanna, V.K., Patro, I.K. and Thakur, M.K. (2018) Postnatal exposure to poly (I:C) impairs learning and memory through changes in synaptic plasticity gene expression in developing rat brain. **Neurobiol. Learn. Mem.**, 155: 379-389. **(Impact Factor: 3.525)**
3. Patro, N., Sinha, S., Singh, K., Chaudhary, J., and Patro, I.K. (2018) Enhanced adult neural stem cell population following bacterial infection during early postnatal life. **Proc. Natl. Acad. Sci. India, Sect. B Biol. Sci.**, Doi: 10.1007/s40011-018-1028-3.
4. Patro, N., Hall R., Patro, I and Morris, C. M. (2018) The Contribution of Aluminium to Alzheimer's disease: A Neuropathological Investigation of Renal Dialysis Cases. **J Neurosci.Neurosurg.** 1.4 1; DOI: 10.31021/jnn.20181118.
5. Patro, Nisha, Naik, A.A. and Patro, I.K. (2018) Developmental Changes in Oligodendrocyte Genesis, Myelination, and Associated Behavioral Dysfunction in a Rat Model of Intra-generational Protein Malnutrition. **Mol. Neurobiol.**: doi: 10.1007/s12035-018-1065-1. **(Impact Factor: 6.19)**
6. Kushwaha, S. S., Patro N., Patro, I.K. (2018)A sequential study of age-related lipofuscin accumulation in hippocampus and striate cortex of rat. **Ann. Neurosci.**DOI: 10.1159/000490908
7. Naik, A.A., Patro, Nisha, Seth, P. and Patro, I.K. (2017) Intra-generational protein malnutrition impairs temporal astrogenesis in rat brain. **Biology Open**: doi: 10.1242/bio.023432**(Impact Factor: 2.5, Cited by 2)**
8. Singh, Kavita, Patro, Nisha, Pradeepa, M. and Patro, I. (2017) Neonatal Lipopolysaccharide Infection Causes Demyelination and Behavioral Deficits in Adult and Senile Rat Brain. **Ann. Neurosci.**24:146–154.
9. Sharma, Arpita, Patro, Nisha and Patro, I.K. (2016) Lipopolysaccharide induced apoptosis of astrocytes: therapeutic intervention by minocycline. **Cell. Mol. Neurobiol.** 36:577–592. DOI 10.1007/s10571-015-0238-y **(Impact Factor: 2.506, Cited by 7)**
10. Naik, A.A., Patro, I.K. and Patro, Nisha (2015) Slow Physical Growth, Delayed Reflex Ontogeny, and Permanent Behavioral as Well as Cognitive Impairments in Rats Following Intra-generational Protein Malnutrition. **Front. Neurosci.** 9:446. doi: 10.3389/fnins.2015.00446 **(Impact Factor: 3.7, Cited by 8)**
11. Patro N., Naik, A. and Patro I.K. (2015) Differential temporal expression of S100b in developing rat brain. **Front. Cell. Neurosci.** 9:87. doi: 10.3389/fncel.2015.00087. **(Impact Factor- 4.2, Cited by 10)**
12. Kaur, H., Patro, I., Tikoo, K. and Sandhir, R. (2015) Curcumin attenuates inflammatory response and cognitive deficits in experimental model of chronic epilepsy. *Neurochem Internat.* 89:, 40-50. **(Impact Factor- 3.385, Cited by 32)**
13. Nagayach, A, Patro, Nisha and Patro, Ishan (2015) Microglia in physiology and pathology of brain. **Proc. Natl. Acad. Sci., India, Sect. B.** DOI 10.1007/s40011-015-0585-y.**(Cited by 1)**

14. Nagayach, Aarti, Patro, Nisha and Patro, I. (2014) Experimentally induced diabetes causes glial activation, glutamate toxicity and cellular damage leading to changes in motor function. **Front. Cell. Neurosci.** Doi: 10.3389/fncel.2014.00355. **(Impact Factor- 4.2, Cited by 27)**
15. Tripathy, Surya, Patro, I., Mahadevan, A., Patro, Nisha, Philip, M. and Shankar, S.K. (2014) Astroglial and microglial alterations in tuberculous and cryptococcal meningitis and its relation to HIV co-infection- A morphometric study on human brain. **J. Infect. Dev. Ctries.** 8(11):1421-1443. **(Impact Factor- 1.2, Cited by 6)**
16. Nagayach, Aarti, Patro, Nisha and Patro, I. (2014) Astrocytic and microglial response in experimentally induced rat brain. **Metab. Brain Dis.** 29:747–76 DOI: 10.1007/s11011-014-9562-z. **(Impact Factor- 2.333, Cited by 45)**
17. Priya, Raj, Patro, I.K. and Parida, M.M. (2014) TLR3 mediated immune response in mice brain following infection Chikungunya virus. **Virus Res.** 189:194-205. **(Impact Factor- 2.745, Cited by 20)**
18. Priya, Raj, Dhanwani, R., Patro, I.K., Rao, P.V. and Parida, M.M. (2013) Differential regulation of TLR mediated innate immune response of mouse neuronal cells following infection with novel ECSA genotype of Chikungunya virus with and without E1:A226V mutation. **Infect. Genet. Evol.**, 20: 396- 406. **(Impact Factor- 2.768, Cited by 13)**
19. Saxena D, Kumar JS, Parida M, Sivakumar RR, Patro IK. (2013) Development and evaluation of NS1 specific monoclonal antibody based antigen capture ELISA and its implications in clinical diagnosis of West Nile virus infection. **J Clin Virol**, 58(3):528-34. **(Impact Factor- 3.287, Cited by 9)**
20. Patro, N., Kumar, K. and Patro, I. (2013) Quick Golgi method: modified for high clarity and better neuronal anatomy. **Indian J. Exp. Biol.**, 51 (9): 685-693. **(Impact Factor- 1.295, Cited by 6)**
21. Patro, Nisha, Singh, Kavita and Patro, I. (2013) Differential microglial and astrocytic response to bacterial and viral infection in the developing hippocampus of neonatal rats. **Indian J. Exp. Biol.**, 51(8): 606-614. **(Impact Factor- 1.295, Cited by 7)**
22. Kumar, K., Patro, Nisha and Patro, I. (2013) Impaired Structural and Functional Development of Cerebellum Following Gestational Exposure of Deltamethrin in Rats: Role of Reelin. **Cell. Mol. Neurobiol.**, 33(5):731-46 **(Impact Factor: 2.506, Cited by 20)**
23. Sharma, Shashi, Joshi, G., Dash, P.K., Thomas, M., Athmaram, T.N., Kumar, J.S., Desai, A., Ravi, A., Patro, I.K., Rao and P.V., Parida, M.M. (2013) Molecular epidemiology and complete genome characterization of H1N1pdm virus from India. **PLOS ONE**, 8(2): e56364. doi:10.1371/journal.pone.0056364. **(Impact Factor – 4.4, Cited by 23)**
24. Mishra, B, Leishangthem, G.D., Gill, K., Singh, A.K., Das, S., Singh, K., Xess, I., Dinda, A., Kapil, A., Patro, I.K. and Dey, Sharmistha (2013) A novel antimicrobial peptide derived from modified N-terminal domain of bovine lactoferrin: Design, synthesis, activity against multidrug-resistant bacteria and Candida. **Biochimica et Biophysica Acta**, 1828 (2013) 677–686. **(Impact Factor – 4.66, Cited by 40)**
25. Swarnkar, S., Goswami, P., Kamat, P.K., Patro, I.K., Singh, Sarika and Nath, C. (2013) Rotenone induced neurotoxicity in rat brain areas: A study on neuronal and neuronal supportive cells. **Neuroscience**, 230, 172–183. **(Impact Factor – 3.458, Cited by 18)**

26. Swarnkar, Supriya, Singh, S., Goswami, P., Mathur, R., Patro, I.K. and Nath, C. (2012) Astrocyte activation: A key step in rotenone-induced cytotoxicity and DNA damage. **Neurochem. Res.**, 37(10):2178-89 (**Impact Factor: 2.24, Cited by 27**)
27. Swarnkar, Supriya, Goswami, P., Kamat, P.K., Gupta, S., Patro, I.K., Singh, S. and Nath, C. (2012) Rotenone-induced apoptosis and role of calcium: a study on Neuro-2a cells. **Arch Toxicol.**, 86(9):1387-97. (**Impact Factor: 4.041, Cited by 36**)
28. Dhanwani, Rekha, Khan, M., Bhaskar, A.S.B., Singh, Rajpriya, Patro, Ishan, Rao, P.V.L. and Parida, M. (2012) Characterization of Chikungunya virus infection in human neuroblastoma SH-SY5Y cells: Role of apoptosis in neuronal cell death. **Virus Res.**, 163: 417- 686. (**Impact Factor: 2.905, Cited by 23**)
29. Patro, N., Sharma, Arpita, Kariaya, K. and Patro I. (2011) *Spirulina platensis* protects neurons via suppression of glial activation and peripheral sensitization leading to restoration of motor function in collagen-induced arthritic rats. **Indian J. Exp. Biol.**, 49:739-748. (**Impact Factor- 1.295, Cited by 13**)
30. Saxena, Gunjan, Patro, I.K. and Nath, C. (2011) ICV STZ induced impairment in memory and neuronal mitochondrial function: A protective role of nicotinic receptor **Behav. Brain Res.**, 224(1): 50-57. (**Impact Factor: 3.393, Cited by 42**)
31. Swarnkar, Supriya, Singh, Sarika, Sharma, S., Mathur, R., Patro, I.K. and Nath, C. (2011) Rotenone induced neurotoxicity in rat brain areas: A histopathological study. **Neuroscience Letters**, 495:178-182. (**Impact Factor: 2.055, Cited by 27**)
32. Khan, M., Dhanwani, R., Patro, I.K., Rao, P.V.L. and Parida, M.M. (2011) Cellular IMPDH enzyme activity is a potential target for the inhibition of Chikungunya virus replication and virus induced apoptosis in cultured mammalian cells. **Antiviral Res.**, 89: 1-8. (**Impact Factor: 4.439, Cited by 68**)
33. Khan Z., Khan, N., Tiwari, R.P., Patro, I.K., Prasad, G.B.K.S. and Bisen, P.S. (2010) Down-regulation of surviving by oxaliplatin diminishes radioresistance of head and neck squamous carcinoma cells. **Radiother. Oncol.**, 96: 267-273. (**Impact Factor: 4.831, Cited by 56**)
34. Swarnkar, S., Singh, S., Mathur, R., Patro, I.K. and Nath, C. (2010) A study to correlate rotenone induced biochemical changes and cerebral damage in brain areas with neuromuscular coordination in rats. **Toxicology**, 272: 17–22. (**Impact Factor: 3.641, Cited by 39**)
35. Mishra, B., Srivastava V.K., Chaudhry, R., Somvanshi, R.K., Singh, A.K., Gill, K., Somvanshi, R., Patro, I.K. and Dey, S. (2010) SD-8, a novel therapeutic agent active against multidrug-resistant Gram positive cocci. **Amino Acids**, 39: 1493-1505. (**Impact Factor: 4.106, Cited by 8**)
36. Patro, Nisha, Nagayach, Aarti and Patro, I.K. (2010) Iba1 expressing microglia in the dorsal root ganglia become activated following peripheral nerve injury in rats. **Indian J. Exp. Biol.**, 48: 110-116. (**Impact Factor: 1.295, Cited by 31**)
37. Patro, I.K., Amit, Shrivastava, M., Bhumika, S. and Patro N. (2010) Poly I:C induced microglial activation impairs motor activity in adult rats. **Indian J. Exp. Biol.**, 48: 104-109. (**Impact Factor- 1.295, Cited by 14**)
38. Patro, Nisha, Kushwaha, S. and Patro, I.K. (2010) Aging of microglia: Does it influence neuroprotection. **Proc. Nat. Acad. Sci. India, Sect. B**, 80(1): 14-23. (**Cited by 1**)
39. Shrivastava, Meghna, Patro, Nisha, Kumar, K. and Patro, I.K. (2009) Changes in pain sensitivity with age, differ in male and female Wistar rats, *Rattus norvegicus* (Berkenhout). **Proc. Nat. Acad. Sci. India, Sect. B**, 79(III): 235-239.

40. Kumar, N., Singh, S., Patro, Nisha and Patro, I.K. (2009) Evaluation of protective efficacy of *Spirulina platensis* against collagen induced arthritis in rats. **Inflammopharmacology**, **17(3): 181-190. (Cited by 33)**
41. Patro, Nisha, Shrivastava, Meghna, Tripathi, Surya and Patro, I.K. (2009) S100 β upregulation: A possible mechanism of deltamethrin toxicity and motor coordination deficits. **Neurotoxicol. Teratol**, **31:169-176. (Impact Factor: 3.274, Cited by 30)**
42. Patro, I.K., Saxena, K., Tiwari, S. and Patro, N. (2008) FK-506 helps motor coordination recovery following sciatic nerve transection in the young but not in the senile rats. **Int. J. Neuroprotec. Neuroregen.**, **4(2):145-150. (Cited by 6)**
43. Saxena, K., Patro, N. and Patro, I.K. (2007) FK506 protects neurons following peripheral nerve injury via immunosuppression. **Cell. Mol. Neurobiol.**, **27:1049-1057. (Impact Factor: 2.423, Cited by 22)**
44. Patro, N. and Patro, I.K. (2005) Effects of deltamethrin on granule cell migration during post-natal development of rat cerebellum. **Indian J. Exp. Biol.**, **43: 158-162. (Impact Factor- 1.295, Cited by 13)**
45. Verma, D., Ray, S.B., Patro, I.K. and Wadhwa, S. (2005) Enhanced analgesic effect of morphine-nimodipine combination after intraspinal administration as compared to systemic administration in mice. **J. Biosci.**, **30: 101-107. (Impact Factor: 1.888, Cited by 6)**
46. Vimal, S., Sissodia, S.S., Meena, P., Barber, S., Shukla, S., Saxena, A., Patro, Nisha, Patro, I.K. and Bhatnagar, M. (2005) Antioxidant effects of *Asparagus racemosus* wild and *Withania somnifera* Dunel in rat brain. **Annals Neuroscience**, **12: 67-70. (Cited by 5)**
47. Singh, N., Patro, I.K. et al. (2004) Biochemical status of antioxidant defence enzymes in geriatric persons suffering from hypertension and ischaemic heart disease. **Indian J. Cardiol.**, **7: 41-43.**
48. Patro, Nisha and Patro, I.K. (2003) Effect of immune activator (Poly I:C) on the rat cerebral cortex. **J. Tissue Res.**, **3(2): 71-75. (Cited by 10)**
49. Patro, Nisha, Gupta, Praveena and Patro, I.K. (2002) Lipofuscin in cell aging and cell death. **Indian J. Gerontol.**, **16: 45-68. (Cited by 2)**
50. Patro, I.K., Chattopadhyay, M. and Patro, Nisha (1999) Flunarizine enhances functional recovery following sciatic nerve crush lesion in rats. **Neuroscience Letters**, **263: 97-100. (Impact Factor: 2.055, Cited by 55)**
51. Patro, Nisha, Mishra, S.K., Chattopadhyay, M. and Patro, I.K. (1997) Neurotoxicological effects of deltamethrin on the postnatal development of cerebellum of rat. **J. Biosci.**, **22: 117-130. (Impact Factor: 1.888, Cited by 29)**
52. Patro, I.K., Patro, Nisha, Singhal, P. and Bhardwaj, S.K. (1996) Simultaneous demonstration of microscopic anatomy, Nissl, lipofuscin and cytological changes using a combination method and fluorescence technique. **Acta Histochem. Cytochem.**, **29(3): 193-197. (Impact Factor: 1.68, Cited by 2)**
53. Patro, I.K., Bhardwaj, S.K., Patro, Nisha and Singhal, P. (1994) Relationship between lifespan potential, specific metabolic rate and lipofuscin accumulation in neurons. **J. Neurochem.**, **63 (Suppl. 2): 10. (Impact Factor: 4.206)**
54. Patro, I.K., Patro, Nisha, Tiwari, B. and Singhal, P. (1994) Vascular changes in post-natal rat brain following experimental exposure to deltamethrin. **J. Neurochem.**, **63 (Suppl. 2): 29. (Impact Factor: 4.206)**

55. Patro, Nisha, Patro, I.K. and Mathur, R. (1993) Changes in the properties of cardiac lipofuscin with age and environmental manipulation. **Asian J. Exptl. Sci.**, **7**:57-60. **(Cited by 6)**
56. James T.J., Sharma, S.P., Gupta, S.K. and Patro, I.K. (1992) 'Dark' cell formation under protein malnutrition: Process of conversion and concept of 'semi-dark' type Purkinje cells. **Indian J. Exptl. Biol.**, **30**: 470-473. **(Impact Factor: 1.295, Cited by 8)**
57. Patro, Nisha, Patro, I.K. and Mathur, R. (1992) Age-pigments as possible markers of environmental damage; CoCl₂ induced lipofuscin accumulation in myocardium. **Geobios**, **19**: 231-234. **(Cited by 5)**
58. Patro, Nisha, Sharma, S.P. and Patro, I.K. (1992) Lipofuscin accumulation in aging myocardium and its reversal by meclorphenoxate. **Indian J. Med. Res. (B)**, **96**: 192-198. **(Impact Factor: 1.516, Cited by 11)**
59. Patro, I.K. and Patro, Nisha (1992) Lipofuscin in aging brain- A selective reappraisal. **Indian Rev. Life sci.**, **12**: 133-146. **(Cited by 6)**
60. Patro, I.K., Patro, Nisha, Sharma, S.P. and James, T.J. (1991) Influence of centrophenoxine on the nucleo-cytoplasmic interaction in senile neurons. **Indian J. Gerontol.**, **5(1)**: 1-11.
61. Patro, I.K., Sharma, S.P. and Patro, Nisha (1989) Formation and maturation of neuronal lipofuscin. **Proc. Nat. Acad. Sci. (India)**, **59(B) III**: 287-293. **(Cited by 4)**
62. Patro, I.K., Sharma, S.P., Patro, Nisha, Kataria, Asha and Upma (1988) Histopathological disruption of the cervical (spinal) central canal of white rats under restraint stress. **Nat. Acad. Sci. Letters**, **11(4)**: 127-129. **(Impact Factor: 0.043)**
63. Sharma, S.P., Patro, I.K., Patro, Nisha and James, T.J. (1988) 'Dark' type Purkinje cells in neuronal aging. **Proc. Indian Acad. Sci. (Animal Sciences)**, **97**: 449-453. **(Cited by 2)**
64. Patro, I.K., Sharma, S.P. and Patro, Nisha (1988) Neuronal lipofuscin: Its formation and reversibility. **Indian Rev. Life Sci.**, **8**: 95-120. **(Cited by 6)**
65. Patro, I.K., Sharma, S.P. and Patro, Nisha (1987) Influence of crowding stress on neuronal aging. **Age**, **10(3)**: 114. **(Impact Factor: 5.839, Cited by 2)**
66. Sharma, S.P., Patro, I.K. and Patro, Nisha (1987) Removal of chloroquine induced lipofuscin by centrophenoxine. **Age**, **10(3)**: 123. **(Impact Factor: 5.839, Cited by 2)**
67. Sharma, S.P., Gupta, S.K. and Patro, I.K. (1987) Influence of centrophenoxine on the anterior horn cells of protein malnourished Wistar rats. **Proc. Nat. Acad. Sci. (India)**, **57(B) IV**: 247-249. **(Cited by 1)**
68. Patro, I.K., Sharma, S.P. and Patro, Nisha (1987) Pre-lipofuscin: The concept and influence of centrophenoxine. **Proc. Nat. Acad. Sci. (India)**, **57(B) III**: 105-108. **(Cited by 5)**
69. Sharma, S.P., Patro, I.K. and Goyal, Nisha (1985) Further studies on the influence of centrophenoxine on the nucleolar activity in senile rats. **Age**, **8(3)**: 82. **(Impact Factor: 5.839)**
70. Goyal, Nisha, Patro, I.K. and Sharma, S.P. (1985) Effects of centrophenoxine (ANP-235) on the extractability of cardiac lipofuscin. **Age**, **8(3)**: 97. **(Impact Factor: 5.839)**
71. Sharma, D., Sharma, S.P. and Patro, I.K. (1984) Effects of protein deficiency on the ependymal cells of the cervical spinal cord of the rat, *Rattus norvegicus*. **J. Sci. Res.**, **6**: 95-97. **(Cited by 1)**

72. Patro, I.K. and Sharma, S.P. (1984) Cytochemical interaction of nucleus and cytoplasm in the Purkinje cells of senile white rats under the influence of centrophenoxine. **Expt. Gerontol.**, **19(4)**: 241-252. (Impact Factor: 3.342, Cited by 16)

Papers published in edited books and proceedings:

73. Patro, I.K. (1990) Lipofuscinolysis by four neurotropic agents: A comparative study. In **Perspective in Aging Research**, Eds., R. Singh and G.S. Singhal, Today and Tomorrow's Printers and Publishers, New Delhi, pp. 133-136. (Cited by 4)
74. Patro, Nisha, Sharma, S.P. and Patro, I.K. (1990) Meclophenoxate and myocardial lipofuscin. In **Perspective in Aging Research**, Eds., R. Singh and G.S. Singhal, Today and Tomorrow's Printers and Publishers, New Delhi, pp. 137-139.
75. Sharma, S.P., Gupta, S.K., James, T.J. and Patro, I.K. (1990) Influence of centrophenoxine on protein malnourishment-induced lipid peroxidation and lipofuscin in rat spinal cord. In **Perspective in Aging Research**, Eds., R. Singh and G.S. Singhal, Today and Tomorrow's Printers and Publishers, New Delhi, pp.117-125.
76. James, T.J., Sharma, S.P., Gupta, S.K. and Patro, I.K. (1990) Aging changes in Purkinje neurons: Formation of 'dark' type cells. In **Perspective in Aging Research**, Eds., R. Singh and G.S. Singhal, Today and Tomorrow's Printers and Publishers, New Delhi, pp. 127-132.
77. Sharma, S.P., James, T.J., Gupta, S.K. and Patro, I.K. (1990) Elimination of protein malnutrition-associated neuronal age-pigment by centrophenoxine. In **Environmental Concern and Tissue Injury**, Eds., R. Prakash and S.M. Choubey, Society for Science and Environment, Muzaffarnagar, India, pp. 123-131.

Chapters published in edited books:

78. Patro, Ishan, Nagayach, Aarti, Sinha, Shrstha and Patro, Nisha (2016) General Physiology and Pathophysiology of Microglia During Neuroinflammation. In **Inflammation: The Common Link in Brain Pathologies**, Ed. Nihar Jana, AnirbanBasu and P.N. Tandon, Springer, Singapore, pp: 17-42.
79. Patro, I, Saxena, K., Nagayach, A. and Patro, Nisha (2014) Involvement of glial cells in pathophysiology of peripheral nerve injury. In **Contemporary Topics in Life Sciences** Ed. P.P. Mathur, Narendra Publishing House, New Delhi, pp. 153-173.(Cited by 1)
80. Patro, Nisha, Saxena, Meghna, Kumar, K., Patro, I.K. (2011) Developmental neurotoxicology of pyrethroids: Structural and functional retardation of cerebellar development. In **Emerging Trends in Zoology** Eds. U.C. Srivastava and S. Kumar, Narendra Publ. House, N. Delhi, pp.1-21.(Cited by 1)
81. Patro, I.K. and Patro, Nisha (2009) Studies on aging of the brain. In: **Neurosciences in India**, Eds. Dhawan, B.N. and Seth, P.K., Indian Academy of Neurosciences and Council of Scientific and Industrial Research, New Delhi, pp.319-334.
82. Patro, I.K., Pathak, Seema and Patro, Nisha (2005) Central response to peripheral nerve injury: Role of non-neuronal cells. In **Molecular and Cellular Neurobiology** (Eds. M.K. Thakur and S. Prasad) Narosa, Delhi, pp. 217-233. (Cited by 11)
83. Patro, I.K., Patro, Nisha, Sharma, S.P. and Chaudhary, Asha (1991) Lipofuscinolysis: An overview. **Advances in Physiological Sciences**, Eds. S.K. Manchanda, W. Selvamurthy and V. Mohankumar, Macmillan (India) Co., New Delhi, pp. 441-450. (Cited by 3)

84. Sharma, S.P., Patro, I.K. and Goyal, Nisha (1987) Centrophenoxine: An aging-reversal agent. **Aging in India: Challenge for the Society**, Eds. M.L. Sharma and T.M. Dak, Ajanta Publications, Delhi, pp. 232-236.
85. Sharma, S.P., Patro, I.K. and Manocha, S.L. (1984) Effects of maternal dietary protein deprivation on the developing myocardium of squirrel monkeys: Lipofuscin pigment deposition and its removal. **Proc. V All India Symp. Develop. Biol.**, pp.93-102.
86. Patro, I.K. and Sharma, S.P. (1982) Histochemical studies on the effect of meclophenoxatehydrochloride (Lucidril) on the neurons of senile white rats. **Proc. I Conf. Assoc. Gerontol. (India)**, pp.80-84.

INTERNATIONAL AND NATIONAL WORKSHOPS, CONFERENCES, ETC. ATTENDED

Workshops

1. National Level Science Teacher's Training/ Workshop and the Function of Science Day 2017, National Science Academy (India), Allahabad, February 25-28, 2017 (Guest of Honour and Thematic Address)
2. NAAC Awareness Workshop on Assessment and accreditation, March 22-23, 2015, Jiwaji University, Gwalior
3. National Workshop Hands on Training for College Teachers) on "In Silico Tools and Techniques in Bioinformatics", August 25-30, 2014, Govt. Kamala Raja Girls PG (Autonomous) College, Gwalior (Resource Person)
4. DBT Hands-on Training Workshop on Methods in Clinical Diagnosis: Cytogenetics, Biochemical, Molecular and Bioinformatics Approaches, Jiwaji University, Gwalior, July 23-August 11, 2007 (Resource person)
5. Delivered Lecture on 27th- 28th June 2006, in the refresher course for college teachers entitled 'Emerging trends in Biosciences' from 27th 28th June 2006 at Department of Biotechnology, Guru Nanak Dev University, Amritsar. Punjab
6. Hands-on Training Workshop on Methods in Gene Analysis: From Molecular Cloning to Bioinformatics (Biocomputing), Jiwaji University, Gwalior, March 1-20, 2006 (Course Faculty)
7. UGC Refresher Course on Modern Trends in Zoology, School of Studies in Zoology, Jiwaji University, Gwalior, March 8-30, 1998.
8. Workshop on Computer-Assisted Learning in Medical Sciences, Brisbane, Australia, September 23-26, 1998.
9. UGC Refresher Course on Environmental Biology, School of Studies in Zoology, Jiwaji University, Gwalior, November 8-30, 1997.
10. A Course on Theory and Practice in Neurobiology, Defence Research and Development Establishment, Gwalior, March 1-4, 1993 (Participated as faculty).
11. Fifth Course in Neurobiology for Post-Graduates in Clinical Neuroscience conducted at the Department of Anatomy, All India Institute of Medical Sciences, New Delhi, February 24 to March 6, 1992.
12. Training Course-cum-Laboratory Workshop on Immunocytochemical Technology conducted at the National Institute of Immunology, New Delhi, January 8-19, 1990.
13. Bio-Medical Workshop on Electron Microscopy conducted by the Regional Sophisticated Instrumentation Centre, Punjab University, Chandigarh, October 25-29, 1986.

International Conferences/ Symposia

14. 3rd International Congress on Gerontology and Geriatric Medicine-2015, November 26-29, 2015 (Invited Lecture)
15. IBRO/APRC Chandigarh Neuroscience School, Panjab University, Chandigarh, November 2-8, 2014 (Resource Person)
16. International Symposium on Neurosciences (Emerging Trends in Neuroscience) & XXXI Annual Conference of Indian Academy of Neurosciences, October 25-27, 2013, NASI, Allahabad (Invited Lecture and Chair)
17. International Conference on Policy Research and Data Needs to Meet the Challenges and Opportunities of Population Aging in Asia, Indian National Science Academy, New Delhi, March 14-15, 2011 (Invited speaker)
18. 5th Congress of Federation of Asian-Oceanian Neuroscience Societies and XXVIII Annual Meeting of Indian Academy of Neurosciences, Indian Institute of Toxicology Research, Lucknow, November 25-28, 2010 (Invited Speaker and Chair)

19. International Symposium on Advances in Neurosciences & Silver Jubilee Conference of Indian Academy of Neurosciences, Banaras Hindu university, Varanasi, November 22-25, 2007 (Chair)
20. International Update on Basic and Clinical Neuroscience Advances & XXIV Annual Conference of Indian Academy of Neurosciences, Industrial Toxicology Research Centre, Lucknow, December 17-20, 2006
21. International Neuroscience Conference, of Indian Academy of Neuroscience and Society for Neurochemistry, India University of Hyderabad, Hyderabad, May 6-8, 2004
22. INDO-US symposium on 'Brain Research' organized by NBRC, held at Indian National Science Academy, New Delhi, Jan 10 – 12, 2002
23. Brisbane'98 Congress of FAPOS, FAONS, APPS and PSNZ, Brisbane, September 27-October 1, 1998
24. The Brain Event, Alzheimer's Disease Society, London, July 5, 1996
25. International Conference on Neurobiology 'From Receptors to Receptors' Tata Institute of Fundamental research, Bombay held at Cochin May 15-18, 1994
26. 2nd Asian Pacific for Neurochemistry Meeting, University of Hyderabad, Hyderabad, September 14-16, 1994
27. International Symposium on Gerontology & VII Conference of the Association of Gerontology (India), All India Institute of Medical Sciences, New Delhi, November 14-16, 1994
28. 2nd Congress of Toxicology in Developing Countries, Society of Toxicology, New Delhi, November 24-28, 1991
29. Second Congress of Asian & Oceanian Physiological Societies, All India Institute of Medical Sciences, New Delhi, November 12-15, 1990

National Conferences/ Symposia

30. National Seminar on Current trends in Life Sciences -2017, Amity Univ., Gwalior, November 10, 2017
31. 86th Annual Session of the National Academy of Sciences (India), December 2-4, 2016, Uttarakhand State Council for Science & Technology, Dehradun
32. Conference on Leveraging Biodiversity for translational Therapeutic Research, March 17-18, 2016, Panjab University, Chandigarh (Invited Talk)
33. 18th Biennial Conference of Association of Gerontology India and 14th Annual Conference of Indian Academy of Geriatrics. November 9-11, 2016, All India Institute of Medical Sciences, New Delhi (Invited Lecture and Chair)
34. XXXIV annual conference of Indian Academy of Neurosciences, National Brain Research Centre, Manesar, October 19 – 21, 2016 (Chaired a Session)
35. National Symposium on Neuroscience- 2015, Recent Advances in Neuroscience and its Application in Medical Sciences, November 13-14, 2015, Ravenshaw University, Cuttack. (Invited Talk)
36. DBT National Symposium on Bioinformatics: Challenges in the Post-Genomic Era, February 2, 2012, University of Jammu, Jammu
37. National Symposium on Molecular Pathogenesis of Neurodegenerative Diseases, Panjab University, Chandigarh, February 22, 2011 (Invited Speaker and Chair)
38. 98th Indian Science Congress, SRM University, Chennai, January 3-7, 2011 (Invited Speaker)
39. 27th Annual Conference of Indian Academy of Neurosciences, NIMS University, Jaipur, December 18-20, 2009 (Invited Speaker and Chair)
40. The Role of Complement and its Receptor in Health and Disease, CME and MP Chapter of Association of Clinical Biochemist of India, GR Medical College, Gwalior, September 14, 2008 (Invited Speaker)
41. 4th Congress of Federation of Indian Physiological Societies, Defence Institute of Physiology and Allied Sciences, New Delhi, January 11-13, 2007 (Invited Talk)
42. 21st National symposium on recent advances in life sciences and Environmental conservation in welfare of human society, Golden jubilee celebration, Kurukshetra University, Kurukshetra, Feb 3-5, 2006 (Invited Speaker)

43. National Symposium on Recent Trends in Molecular Biology (27-28 Feb, 2006) College of life Sciences, CHRI, Gwalior (Chair)
44. Symposium of Emerging Trends in Neurosciences and 23rd annual meeting of Indian Academy of Neurosciences, National Institute of Mental Health and Neurosciences, Bangalore, December 11-14, 2005 (invited Speaker and Chair)
45. 12th Biennial conference of Association of Gerontology (INDIA), 2nd annual conference of Indian Academy of Geriatrics, at AIIMS, New Delhi, Nov. 5-7 , 2004
46. 19th Annual meeting of Indian academy of neuroscience and international symposium on neurodegeneration and neuroprotection at Indian Institute of Chemical Biology, Calcutta, March 18-20, 2002
47. Symposium on "Brain Genomics" by society for neurochemistry (India) and ICMR- Centre for research on aging and brain at School of Life Sciences, University of Hyderabad, December 9-10, 2002.
48. National Seminar on Generation of Resources in Universities, Association of Indian University at Indian Institute of Technology, Chennai, November 21-22, 2001
49. Colloquium on "Brain Research", National Brain Research Centre, held at Indian national Science Academy, New Delhi, October 1, 1999
50. National Conference on Gerontology & Symposium on Molecular Markers of Aging, Jiwaji University, Gwalior, April 7-9, 1997
51. A Course on Theory and Practice in Neurobiology, Defence Research and Development Establishment, Gwalior March 1-4, 1993 (Invited Lecture)
52. National Seminar on Environmental Impact Assessment Through Inhabitants of Aquatic and Terrestrial Habitats, Berhampur University, Berhampur, December 14-16, 1991
53. First National Brain Storming Session on Neuroimmunology, National Institute of Immunology, New Delhi, February 19-21, 1990
54. Symposium on Differentiation, Development & Senescence, Banaras Hindu University, Varanasi, October 19-21, 1989
55. 3rd National Conference on Aging with a Special Session on Brain Aging, University of Hyderabad, Hyderabad, November 26-28, 1986
56. National Seminar on "Aging in India: Challenge for Society", Haryana Agricultural University, Hissar, April 22-24, 1985
57. National Integration Project (Inter-State Camp for Students and Teachers), Turnbull High School, Darjeeling, May 23- June 7, 1971

SUCCESS STORIES ON ACHIEVEMENTS

Success Story-1

Neuroscience Education in India

(The pioneering effort of Ishan Patro)

Understanding the structure, function and dysfunction of the human brain is the greatest challenge of this millennium. We need to train the brains to understand the brain. Dr. Ishan Patro understood this soon as he started his career as Assistant Professor in 1989. He pursued research in neuroscience for which he developed infrastructure within next 4-5 years. His pioneering research in the important areas of neuroscience like developmental neurobiology, neuron-glia interactions in health and disease, peripheral nerve injury and brain aging led him to realize the need for trained hands in neuroscience.

With his commitment, capabilities, vision, aspiration and endurance Dr. Patro conceptualized, initiated and established teaching of neuroscience at master's level (M.Sc. Neuroscience) in 2001. This was the first program of neuroscience education in the country. This proved to be of immense value in encouraging young minds to enter into the challenges of understanding the brain structure and function with R&D in neuroscience as their career.

The Neuroscience Centre at Gwalior soon received recognition by peers as an education centre and it attracted significant funding from Department of Science & Technology (DST), Department of Biotechnology (DBT) and the Indian Council of Medical Research (ICMR), Govt. of India for research. DBT supports the M.Sc. Neuroscience programme under the DBT-Human Resource Development Scheme, since 2004. With support from these agencies the Department now has excellent teaching and research facilities, a well-stocked library, conference facility and others.

His research work and grants provided him strength in executing the vision for **establishing India's 1st University Teaching Department of Neuroscience** at Jiwaji University, Gwalior.

With support from eminent Professors from several leading Institutions of India in a truly inter-disciplinary and inter-Institutional manner Prof. Patro has been leading this teaching programme since 2001. His constant motivation through continuous interaction with the students, solving their problems at one to one basis as well as in groups, has helped in creating a critical mass of neuroscientists who work not only with him but also in other places. He soon developed successful research collaborations with other Institutes.

We have observed him achieving excellence in teaching. His students are performing very well. He could inspire almost 70% of the M.Sc. Neuroscience students, to take up careers in Science and Technology, now working in India and abroad. He is a great organizer and has executed several Hands-on Training programmes, Conferences and popularized neuroscience research via Brain Awareness Weeks and other science popularization activities. He is an equally good science administrator.

The formal sessions, organized by Prof. Patro, to educate the teachers and post-doctoral students about neuroscience education at different National and International Conferences have stimulated two other Institutes, at Kolkata and Chennai, to offer this teaching programme.

Considering his excellence in teaching and research in neuroscience he was selected as Sectional Chairman for development of National Level Biotechnology Syllabus for PG courses supported by the DBT, Govt. of India, Prof. Patro developed the M.Sc. Neuroscience syllabus and designed the course material with fellow members. The study material designed by him serves as a model syllabus for M.Sc. Neuroscience (http://bcil.nic.in/Revised_courses_biotech.html).

The success of the effort is evidenced from the placement record of his students at leading institutes in India and abroad (please visit: www.neuroscienceju.com) and the academic recognition he owns: Fellowship of the Indian Academy of Neurosciences and the National Academy of Sciences (India).

Success Story-2

Glial Cell Research in India

(National Initiative on Glial Cell Research in Health and Disease)

Apart from providing support to the neurons (considered to be the major players in brain function), recently, glial cells have emerged as active contributors to different aspects of brain functions. We are now debating “Do the billions of non-neuronal cells in the brain send messages of their own?” (Smith, Nature: 468, 160, 2010). Thus, studies on the role of glial cells in health and disease are of importance.

With the training from MRC, Newcastle, UK, Prof. Ishan Patro started work on the role of glial cells in neurodegeneration and neuroregeneration. The DBT-Task Force on Neuroscience as back as 2006 commended his contributions and recommended networked country-wide action on this area under his leadership.

Subsequently Prof. Patro brought together neuroscientists working towards this subject to strengthen their interest through a national symposium on “Glial Neurobiology” in 2007. A FAONS Satellite symposium **“Glial in health and disease”** was organized at Gwalior that was supported by the Department of Biotechnology (DBT), Govt. of India, New Delhi in 2010. The Neuroscientists, who have substantially contributed to Glial cell research, by now attended the symposium.

During the meeting, we discussed the issue in detail and unanimously agreed to propose for a **“National Initiative on Glial Cell Research in Health and Disease”**. Soon 13 Neuroscientists from the Centre for Cellular and Molecular Biology, Hyderabad, Central Drug Research Institute, Lucknow; Jawaharlal Nehru University, New Delhi; Jiwaji University, Gwalior; National Brain Research

Centre, Manesar and National Institute of Mental Health and Neurosciences, Bangalore expressed their interest to join the networked effort. This was discussed in the meetings of the DBT Expert Group on Neuroscience held at New Delhi.

While Glia, the non-neuronal cells that make up most of the brain, was left out of an ambitious US brain mapping initiative called the Brain Research through Advancing Innovative Neurotechnologies (BRAIN) Initiative announced by US President Barack Obama (Douglas Fields, Nature, 501, 25, 2013) we could justify the DBT National Initiative on Glial Cell Research in Health and Disease earlier in 2012.

Gwalior Centre was identified to act as the Nodal Centre and execute its functions as per the directives of DBT. This centre also coordinates meetings of the participating Centres from time to time and agrees to facilitate the execution of the projects as per the requirements and advice of Department of Biotechnology, Govt. of India, New Delhi.

The National Initiative is now being processed by DBT for funding for the 2nd Cycle. We expect more intense collaborations in near future and to create a dent in the understanding of the working of the glial cells in the brain.

REFERENCES

Padmavibhushan Prof. P.N. Tandon, FNA
National Research Professor
President, National Brain Research Centre, Nainwale Mode
Manesar 122050
Postal Address: 1, Jagriti Enclave, Vikash Marg, New Delhi 110092
Phone: 011-22163272; Mobile: 9971326851
tandon@nbrc.ac.in

Prof. P.K. Seth, FNA
Former Director, ITRC
Advisor
BIOTECH PARK
Sec-G, Jankipuram, Kursi Road, Lucknow-226021
Mobile: 9839010166
prahladseth@gmail.com, ceo@biotechpark.org.in, pkseth@biotechpark.org.in

Prof. Subrata Sinha
Director
National Brain Research Centre
Nain Wale Mode, Manesar 122050
Mob.: 9811901376
subrata.sinha@nbrc.ac.in

Dr. Vishwa Mohan Katoch, FNA
Former Secretary, Department of Health & Director General ICMR
Indian Council of Medical Research
Ansari Nagar, New Delhi 110029
vishwamohan_katoch@yahoo.co.in

Prof. Vijayalakshmi Ravindranath,
Chairperson,
Centre for Neuroscience,
Old TIFR Building,
Indian Institute of Science
Bangalore-560012.
PH.No:+91 80 2293 3431
Fax.No:080-23603323
viji@cns.iisc.ernet.in

Prof. Satya Prakash Tiwari
(Former Vice Chancellor, Jiwaji University, Gwalior)
Emeritus Professor, Department of Physics
Panjab University, Chandigarh
Mob: 9876638503
profsprakash@hotmail.com

Prof. Thomas David Albright
Director, Vision Center Laboratory
The Salk Institute for Biological Studies
10010 North Torrey Pines Road
La Jolla, California 92037 USA
tom@salk.edu