

Dibashree Tamuli, Ph.D.

Department of Zoology
Nalbari College, Assam - 781335
ORCID No. 0000-0003-1763-2285
email: dibashree@gmail.com
cell: +91 8800 941876

Career aim

To develop effective
solutions towards
diagnosis and treatment
of neuronal diseases



Research interests

Neurobiology, autonomic neurosciences, neuroimaging, big data analysis, neurodegenerative disease, neuro oncology

Professional Experience

- 1. Assistant Professor**, March 2020 - Present
Department of Zoology
Nalbari College, Gauhati University, Assam, India
<http://nalbaricollege.org>
- 2. Postdoctoral Research Associate**, ICMR Fellow
Oct. 2018 – Mar. 2020
Autonomic Function Lab, Department of Physiology
All India Institute of Medical Sciences (AIIMS), New Delhi, India
<https://www.aiims.edu/en/about-us.html?id=1256>
- 3. Senior Research Fellow**, ICMR Fellow
May. 2018 – Oct. 2018
Autonomic Function Lab, Department of Physiology
All India Institute of Medical Sciences (AIIMS), New Delhi, India
<https://www.aiims.edu/en/about-us.html?id=1256>

Hands on skills

Autonomic Function Test Technique

Autonomic tone (Heart Rate Variability, HRV; Blood Pressure Variability, BPV; Baroreflex sensitivity, BRS); Cardiovascular autonomic reactivity test (Deep Breathing, Valsalva Manoeuvre, Head up Tilt, Hand Grip, Cold Pressor); Sudomotor autonomic reactivity test (Quantitative Sudomotor Axon Reflex Test, QSART); Autonomic score (Composite Autonomic Severity Score, CASS)

Autonomic Function Test Software

Labchart Pro 7 (AD instruments, Australia) for Lead II ECG; Nevrokard (Nevrokard Kiauta, Slovenia) for HRV; Finometer® model 2 (FMS, Finapres Medical Systems, Amsterdam, the Netherlands) for finger photoplethysmography; WR TestWorks™ for QSART

Neuroimaging Technique	Structural MRI (Cortical thickness and Volumetric analysis), Functional MRI (BOLD) using 3T scanner (Philips, Achieva)
Neuroimaging Software	FreeSurfer, FSL, SPM
Statistical Tools	MATLAB, R, SPSS, Graph pad Prism
Machine learning model	Linear Discriminant Analysis (LDA); Support Vector Machine (SVM); Dimensionality Reduction and Feature Selection; Random Forest Algorithm
Animal Handling	Basic rat handling, stereotaxic rat surgery (single unit recording)
Biochemical techniques	RNA isolation, PCR, RT-PCR, ELISA, Gel Electrophoresis, cell culture
Operating Systems	Linux/Unix/CentOS, Windows

Education

Doctor of Philosophy (Ph.D.), 2018

(Ph.D. topic: Evaluation of autonomic functions in patients of spinocerebellar ataxia types 1, 2 and 3 and comparison with morphological changes in brain
Supervisor: Prof. Kishore Kumar Deepak, Head, Dept. of Physiology, AIIMS, New Delhi)
Department of Physiology

All India Institute of Medical Sciences (AIIMS), New Delhi

<https://www.aiims.edu/en/about-us.html?id=1256>

Masters in Science, (M.Sc.) 2010

Department of Zoology

Gauhati University, Guwahati, Assam India

<https://www.gauhati.ac.in/>

Research Publications

1. **Tamuli D**, Godiyal AK, Kaur M, Jaryal AK, Srivastava AK, Deepak KK. Autonomic function based classification of spinocerebellar ataxia type 1 and 2 using machine learning classifiers. *Indian J Physiol Pharmacol* 2017; 61(4): 323–332.
2. **Tamuli D**, Kaur M, Boligarla A, Jaryal AK, Srivastava AK, Deepak KK. Depressed baroreflex sensitivity from spontaneous oscillations of heart rate and blood pressure in SCA1 and SCA2. *Acta Neurologica Scandinavica*. 2019 Nov;140(5):350-358.
3. **Tamuli D**, Kaur M, Sethi T, Singh A, Faruq M, Jaryal AK, Srivastava AK, Kumaran SS, Deepak KK. Cortical and subcortical brain area atrophy in SCA1 and SCA2 patients in India: the structural MRI underpinnings and correlative insight among the atrophy and disease attributes. *Neurology India*. 2021 Sep 1;69(5):1318.
4. **Tamuli D**, Kaur M, Jaryal AK, Srivastava AK, Kumaran SS, Deepak KK. Structural atrophy of central autonomic network correlates with the functional attributes of autonomic nervous system in spinocerebellar ataxia patients. *Journal of Clinical Neuroscience*. 2021 Nov 1;93: 274-81.
5. **Tamuli D**, Kaur M, Jaryal AK, Srivastava AK, Deepak KK. Composite autonomic severity scoring in spinocerebellar ataxia type 1 and 2. (Under Revision in *Acta Neurologica Scandinavica*); 2022.

Teaching experience

(Graduate students)	Non-chordates	(ZOO-HC-1016, 6 credits)
	Animal Diversity	(ZOO-RC-1016, 4 credits)
	Cell Biology	(ZOO-HC-2026, 6 credits)
	Physiology and Biochemistry	(ZOO-RC-3016, 4 credits)
	Animal Physiology: Controlling and coordinating systems	(ZOO-HC-3026, 6 credits)
	Anatomy of Vertebrates	(ZOO-HC-4016, 4 credits)
	Animal Physiology: Life sustaining systems	(ZOO-HC-4026, 6 credits)
	Research methodology	(ZOO-SE-4034, 4 credits)
	Animal Physiology	(M-501, 6 credits)
	Endocrinology and Immunology	(M-503, 6 credits)
	Biological Techniques and Biostatistics	(M-504, 6 credits)
	Evolution and Adaptation	(M-602, 6 credits)

Awards & Excellence

1. **Dr. B. K. Anand** award for the best research paper published in Physiology by the Association of Physiologist and Pharmacologist (APPI), PGIMER, Chandigarh from 13th Dec.-15th Dec., 2022.
2. **Dev Raj Bajaj** award for the best paper on the development of newer techniques/ instrumentation in Physiology/Pharmacology or Allied Sciences by the Association of Physiologist and Pharmacologist (APPI), held at Manipal Academy of Higher Education, Manipal from 27th Nov.-1st Dec., 2018.
3. **Neurology award** as best paper in 18th Annual Conference of Delhi Neurological Association & 14th Neuro Nurse Forum (DNACON), New Delhi from 23rd -24th January, 2016.
4. Awarded Research Associateship from Indian Council of Medical Research (ICMR), New Delhi, India (45/9/2018-PHY/BMS).
5. Awarded Senior Research Fellowship from Indian Council of Medical Research (ICMR), New Delhi, India (45/9/2018-PHY/BMS).
6. Award of Institute Fellowship for PhD [Reg. No. 264/2013-PhD; No.F.5-1/2013-Acad.1; Department of Physiology, AIIMS, New Delhi].
7. Qualified All India Entrance for PhD program conducted by AIIMS, New Delhi, 2013.
8. Qualified Council for Scientific and Industrial research - National Eligibility Test CSIR-NET (Dec' 2014).
9. Qualified Graduate Aptitude Test in Engineering (GATE- 2012).
10. Qualified State level Eligibility Test for North East region of India (SET-2011).

Travel grants

1. CSIR- International Travel Grant Award for the International Congress of Parkinson's Disease and Movement Disorders from October 5 – 9, 2018 in Hong Kong.
2. International Congress Travel Grant Award from All India Institute of Medical Sciences (AIIMS), New Delhi and the Conference in the XXIII World Congress on Parkinson's Disease and Related Disorders, August 19-22, 2018; Lyon, France.
3. International travel grants from Indian Council of medical Research (ICMR), Council for Scientific and Industrial research (CSIR) and Department of Biotechnology (DBT) to attend the 28th International Symposium on the autonomic nervous system from November 1 – 4, 2017 at the Wyndham Grand Clearwater Beach Florida.
4. International Congress Travel Grant Award for the International Congress of Parkinson's Disease and Movement Disorders, June 4-8, 2017; Vancouver, Canada
5. Trainee (Educational) Stipend from the 25th Annual Meeting of International Society for Magnetic Resonance Imaging (ISMRM), 22 – 27 April 2017; Honolulu, HI, USA

Research projects**Principal Investigator**

Title: Comparative study of gene expression profiling of molecular marker in primary and secondary glioblastoma in Assam, India (Indian Council of Medical research, ICMR, 2020) (Project id: 2020-10031; 2 years)

Description: Glioblastoma (GBM) is the most common and very aggressive malignant brain tumor with a high prevalence rate worldwide. Notably, the incidence rate of brain tumor is highest in Assam among the North-Eastern states of India. Clinically, the glioblastoma is divided into primary glioblastoma (pGBM) and secondary glioblastoma (sGBM). Even though the clinical differentiation, histologically both GBMs are undistinguishable, and isocitrate dehydrogenase-1 (IDH1) mutation has been considered as the molecular marker to differentiate pGBM and sGBM. No available literature has been found on the differential expression of molecular marker in different GBMs in the population of Assam. Therefore, it is imperative to study the prevalence of molecular marker mutation in the pGBM and sGBM to develop prognostic, diagnostic and therapeutic strategies.

Research Associate

Title: Evaluation of autonomic functions in patients of spinocerebellar ataxia types 1, 2 and 3 and comparison with morphological changes in brain (Indian Council of Medical research, ICMR, 2018). (Project id: 45/9/2018-PHY/BMS; May 2018 – Mar. 2020)

Description: The work primarily focused on differentiating the clinically heterogeneous neurodegenerative disorders, spinocerebellar ataxia (SCA) types 1, 2 and 3. The broad idea of this study was to find the association of structural changes in the brain morphology with the functional changes in autonomic nervous system which may be the underlying cause of clinical heterogeneity of SCA patients. Then, finally machine learning classifiers have been used to characterize the SCA subtypes. The study has shown potential clinical prospects in prognosis and diagnosis of the SCA1, SCA2 and SCA3 patients. The comprehensive research has of great importance in understanding the autonomic relay center of brain studied in vivo in spinocerebellar ataxia patients.

Submitted**Principal Investigator**

Title: Evaluation of the role of PIP5 kinase in glioblastoma: the molecular underpinning for therapeutics (Submitted to DBT, LOI in neuroscience, 2022).

Description:

The WHO grade IV, Glioblastoma multiforme (GBM), is the most frequent and aggressive brain tumor, exhibiting a high rate of recurrence and poor prognosis as the invasiveness of tumor. The global incidence rate of GBM is estimated as 3 to 5 per 1,00,000 people each year. According to National Cancer Registry of Indian Council of Medical Research, Delhi has the highest rate of incidence of brain tumor, and next is Assam in India, indeed, Assam has the highest rate incidence among the North East states of India. This is a matter of serious concern for GBM treatment. The multifaced role of PIP5 kinase, in turn, phosphorylates the precursor molecule phosphatidylinositol into PIP2 in glioblastoma is unappreciated or poorly studied. Therefore, the present study has been designed to explore the PIP5 kinase signaling along with PIP2 which is the key conversion product of PIP5 kinase in GBM. It would be also interesting to know incidence of the AKT1 mutation in GBM in Indian scenario and the involvement PIP2 binding to AKT1. Here, the paucity of literature imposes to study the important phenomenon of autophagy and role of PIP5 kinase in autophagy in glioblastoma. These lines of explorations may have a great therapeutic impact on GBM treatment.

Invited talks

1. *Autonomic brain atrophy as a neurodegenerative biomarker in spinocerebellar ataxia*, Proceedings of the XL Annual Meeting of the Indian Academy of Neurosciences, IAN-2022 (Souvenir and abstract book) organized by Department of Biomedical Engineering, School of Technology, North-Eastern Hill University (NEHU), Shillong, India. 2022. <https://ian2022nehu.com/>
2. *The differential neurodegeneration associated with the clinico-genetic profile of SCA1 and SCA2: Neuroimaging based study*. Proceedings of XXXVIIth Annual Conference of Indian Academy of Neuroscience (Souvenir and abstract book), AIIMS, New Delhi, India. 2019 http://www.ianaiims2019.com/wpcontent/uploads/2019/11/Final_Scientific_Programme_IAN_2019.pdf
3. *Structure-function relationship in spinocerebellar ataxia: a structural 3T MRI based study followed by autonomic function assessment*. Proceedings of the Conference on Green, Sustainable and Evolving Sciences (GSES-2019) & 64th Annual Technical Session of Assam Science Society (Souvenir and abstract book), Cotton University, Assam, India. 2019 https://cottonuniversity.ac.in/pdf/Life%20and%20Environmental%20Sciences_GSES.pdf
4. *Assessment of Autonomic Functions in patients of Spinocerebellar ataxia types 1, 2 & 3*; 22nd Dec., 2015, Department of Physiology, Gauhati Medical College, Guwahati, Assam, India.
5. *Assessment of brain stem atrophy and autonomic functions in spinocerebellar ataxia types 1 and 2 patients*. 61th annual conference of Association of Physiologists & Pharmacologists of India (APPICON); AIIMS, Jodhpur, Indian J Physiol Pharmacol, 59(5) 2015. (Souvenir and supplement).
6. *Differential involvement of cortical areas in the spinocerebellar ataxia types 1, 2 and 3 patients*. Proceedings of XXXIIIth Annual Conference of Indian Academy of Neuroscience, pp.66-67. (Souvenir and abstract book), Panjab University, Chandigarh, India, 2015.
 - a. <https://crikc.puchd.ac.in/pdf/xxxiii-annual-conference-of-indian-academy-of-neurosciences.pdf>
7. Evaluation of brain volumetric changes along with autonomic function in the patients of spinocerebellar ataxia types 1, 2 and 3. Golden Jubilee Year Celebration Lecture- IV. 29th Oct., 2015. Department of Zoology, Gauhati University, Assam, India.
8. *Assessment of Autonomic Function in Human Beings*. 16th June, 2014; Srimanta Sankardeva University of Health Sciences in collaboration with Department of Physiology, Gauhati Medical College, Guwahati, Assam.

Co-Curricular activities

1. Participant on the workshop of “National Education Policy 2020” organized by IQAC, Nalbari College, Nalbari, Assam held on 20th March, 2023.
2. Participant on the “Faculty Induction Program” organized by Ramanujan College, University of Delhi held from 21st November to 20th December, 2022.

3. Participant on the "67th Annual National Conference of Association of Physiologists and Pharmacologists of India (APPICON 2021-22)" organized by Department of Physiology and Pharmacology, ESIC Medical College and Hospital, Faridabad from 13th to 16th April, 2022.
4. Participant of **Short Term Course** on "Soft Skills and Presentation Skills" organized by the UGC Human Resource Development Centre, Aligarh Muslim University, Aligarh held from 23rd to 30th September, 2021.
5. Awardee of Consolation Prize in FAME (Focus on Applied Medicine & Engineering) Biotech 2021 Hackathon held on 26th June 2021, organized by ISVEC in association with Bionest IASST, Guwahati, Assam
6. Participant of **Faculty Development Program** on "Intellectual Property Rights" organized by E&ICT Academy IIT Guwahati held from 21st to 27th June, 2021 in association with IQAC, Nalbari College, Nalbari, supported by Ministry of Electronics and Information Technology (MeitY), Govt. of India.
7. **Organizer**, National Seminar on "Directions and Opportunities for Implementing National Education policy 2020 in North-East" held on 27th– 28th February 2021 at Seminar Hall, GUIST New Building, Gauhati University, Assam, India.
8. **Evaluator**, State Level Children's Science Congress-2020, Assam held at on 18th – 20th January, 2021 at Mahendra Narayan Chaudhury Balika Mahavidyalaya, Nalbari, Assam
9. **Organizer/resource person**, workshop on "Techniques in Physiological Sciences for SAARC Nations - Advanced (TIPS-Advanced)" held on 12th– 14th December 2019 at the department of Physiology, All India Institute of Medical Sciences (AIIMS), New Delhi, India.
10. **Organizer/resource person**, workshop on "Techniques in Physiological Sciences for SAARC Nations (TIPS)" held on 5th– 7th December 2018 at the department of Physiology, All India Institute of Medical Sciences (AIIMS), New Delhi, India.
11. **Organizer**, Workshop on "Last mile connectivity for indigenous medical devices developed under DST-Hands on workshop on available technologies" held on 27th March 2017 at the department of Physiology, All India Institute of Medical Sciences (AIIMS), New Delhi, India.
12. **Organizer/resource person**, workshop on "Techniques in Physiological Sciences for SAARC Nations (TIPS)" held on 6th– 8th December 2017 at the department of Physiology, All India Institute of Medical Sciences (AIIMS), New Delhi, India.
13. **Organizer/resource person**, workshop on "Techniques in Physiological Sciences for SAARC Nations (TIPS)" held on 20th– 22th December 2016 at the department of Physiology, All India Institute of Medical Sciences (AIIMS), New Delhi, India.
14. **Organizer**, Conference of Society of Young Scientists (SYSCON-2016) held on 26th May, 2016 in AIIMS, New Delhi.
15. **Organizer/resource person**, workshop on "Techniques in Physiological Sciences for SAARC nations" held on 16th December 2015 at the department of Physiology, All India Institute of Medical Sciences (AIIMS), New Delhi, India
16. **Invited resource person**, pre-conference workshop in 61th annual conference of Association of Physiologists & Pharmacologists of India (APPICON), held on 26th November, 2015 at All India Institute of Medical Sciences (AIIMS), Jodhpur, India.
17. **Invited resource person**, pre-conference workshop in 60th annual conference of Association of Physiologists & Pharmacologists of India (APPICON), held on 19th November, 2014 at Blue Lily Beach Resort, Puri, India.
18. **Invited resource person**, pre-conference workshop in 59th annual conference of Association of Physiologists & Pharmacologists of India (APPICON), held on 26th November, 2013 at National Institute of Mental Health and Neuro Sciences (NIMHANS), Bengaluru, India.

Memberships

1. Life member of the Association of Physiologists and Pharmacologists of India (Registration No. 5/1135 of 1957-58).
2. Annual member of International Parkinson and Movement Disorder Society (Member ID: 58590).

Oral Presentations

1. Tamuli D, Faruq M, Kumaran SS, Jaryal AK, Srivastava AK, Deepak KK: Subcortical brain areas correlate genetic characteristics in spinocerebellar ataxia type 2 patients. Proceedings of XXIIIth World Congress on Parkinson's Disease and Related Disorders; 2018, Lyon, France.
2. Tamuli D, Kumaran SS, Jaryal AK, Srivastava AK, Deepak KK: Evaluation autonomic functions in patients of SCA types 1, 2 and 3 and their clinico-radiological correlation. Proceedings of 18th Annual Conference of Delhi Neurological Association; 2016, New Delhi.
3. Tamuli D, Sethi TP, Singh A, Kumaran SS, Jaryal AK, Srivastava AK, Deepak KK: Determination of volume of specific brain regions as predictor for heart rate variability indices in spinocerebellar ataxia patients. Proceedings of 29th Annual Meeting of Society of Neurochemistry; 2015, Shillong.
4. Tamuli D, Chandran DS, Jaryal AK, Srivastava AK, Deepak KK: SCA subtypes differ in baroreflex dependent and independent response for autonomic function. Proceedings of XXVIIth Annual Conference of the Physiological Society of India; 2015, Kolkata.
5. Tamuli D, Sinha S, Kumaran SS, Singh A, Jaryal AK, Srivastava AK, Deepak KK: Assessment of brain stem atrophy and autonomic functions in spinocerebellar ataxia types 1 and 2 patients. Proceedings of 61th Annual Conference of Association of Physiologists and Pharmacologists of India; 2015, Jodhpur.

Poster presentations

1. Tamuli D, Jaryal AK, Srivastava AK, Deepak KK. "Prevalence of cardiac autonomic neuropathy in spinocerebellar ataxia type 1 and 2" Proceedings of the 67th Annual National Conference of Association of Physiologists and Pharmacologists of India (APPICON 2021-22).
2. Tamuli D, Kaur M, Jaryal AK, Srivastava AK, Kumaran SS, Deepak KK. Cortico-autonomic association: The structural atrophy central autonomic network correlate with functional attributes of autonomic nervous system in spinocerebellar ataxia patients. *Parkinsonism & Related Disorders*. 2020 Oct 1;79:e110-1.
3. Tamuli D, Kumaran SS, Jaryal AK, Srivastava AK, and Deepak KK. 2019. "Altered Connectivity using Resting State fMRI in SCA1 and SCA2 Patients." Proceedings of the 27th Annual Meeting of International Society for Magnetic Resonance Imaging (ISMRM)
4. Tamuli D, Kaur M, Kumaran S, Jaryal A, Srivastava A, Deepak KK, 2018. "Cortical and brainstem neurodegeneration associate with the clinical severity in spinocerebellar ataxia patients." *Mov Disord*, pp.S283 (Supplement)
5. Tamuli D, Kaur M, Kumaran SS, Jaryal AK, Srivastava AK., Deepak KK, 2017. "Correlation of autonomic dysfunction with the atrophy of central autonomic brain areas in SCA patients." *ClinAuton Res*, 27(5), pp.344. (Supplement)
6. Tamuli D, Godiyal AK, Jaryal AK, Srivastava AK, Deepak KK, 2017 "The spectrum of composite autonomic severity score in SCA1, SCA2 and SCA3 patients." *MovDisord*, pp.230.(Supplement)
7. Tamuli D, Sethi TP, Singh A, Kumaran SS, Jaryal AK, Srivastava AK, and Deepak KK. 2017. "Volumetric MR analysis of brain areas identifies SCA 1, 2 and 3 by applying random forest classifier." Proceedings of the 25th Annual Meeting of International Society for Magnetic Resonance Imaging (ISMRM)
8. Tamuli D, Jaryal AK, Srivastava AK, Deepak KK, 2016. "Vagal and adrenergic baroreflex sensitivity induced by Valsalva maneuver in patients of SCA1, SCA2 and SCA3." *Clin Auton Res*, 26(5), pp.344. (Supplement)
9. Tamuli D, Faruq M, Jaryal AK, Srivastava AK, Deepak KK, 2015. "Comparison of cardiovagal baroreflex sensitivity from phase IV of Valsalva maneuver in SCA1 and SCA 2 patients." *Autonomic Neuroscience: Basic and Clinical*, 192, pp.84.
10. Tamuli D, Faruq M, Jaryal AK, Srivastava AK, Deepak KK, 2015. "Sympathetically induced sudomotor and cold pressor test in patients of spinocerebellar ataxia 2: A preliminary study." *MovDisord*, 30(1), pp.S1–S567. (Supplement).
11. Tamuli D, Kaur M, Jaryal AK, Srivastava AK, Deepak KK, 2017, "Lateralization of heart rate variability parameters in spinocerebellar ataxia patients." *Indian J Physiol Pharmacol*, 61(5) pp.165 (Supplement)
12. Tamuli D, Faruq M, Jaryal AK, Srivastava AK, Deepak KK, 2014. "Comparison of time domain parameters

- of heart rate variability in SCA1 and SCA2 patients." Indian J Physiol Pharmacol, 58(5). (Supplement)
13. Garg P, Tamuli D, Kachhawa G, Jaryal AK, Deepak KK, 2014. "Sequential changes in arterial stiffness in uncomplicated pregnancy." Indian J Physiol Pharmacol, 58(5). (Supplement)

Professional References

Dr. Kishore Kumar Deepak

Professor and Head
Department of Physiology
In-Charge, Autonomic Function Lab,
Executive Editor, Indian J Physiology & Pharmacology
(www.ijpp.com)
Room No. 2009, Teaching Block
All India Institute of Medical Sciences
New Delhi 110029, India
✉ kkdeepak@gmail.com
Ph: +91 11 2659 3583 (O);
Mob: +91 9868397129

Dr. Achal Kumar Srivastava

Professor
Department of Neurology
Room No. 60, CN Tower
All India Institute of Medical Sciences
New Delhi 110029, India.
✉ achalsrivastava@hotmail.com
Ph: +91 11 2654 6688 (O);
Mob: +91 9811178784

Dr. Kaushik Mandal

Clinical Professor of Surgery
Department of Physiology
Wayne State University School of Medicine
Medical Director of Cardiovascular Services
Detroit Medical Centre
Sinai Grace Hospital
6001 W Outer Drive, POB 300
Detroit, MI 48235
✉ kmandal@dmc.org
Ph: +1 313-966-1717 (O);
Mob: +1 443-299-2921

.....my CV ends here