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About Me

Bimal K. Chetri is a dedicated researcher specializing in high-altitude medicinal plants, genomics, plant flow cytometry, and ecophysiology. He carried out his PhD research work at the Applied Biodiversity Lab, under the School of Agro and Rural Technology, IIT Guwahati, India, under the supervision of Prof. Latha Rangan and Prof. Sudip Mitra. His research focused on understanding the genomic diversity and ecological adaptations of herbal plants found in high-altitude regions. His work advances understanding of local knowledge on medicinal plants, organellar genome mining, molecular phylogeny, and evolutionary dynamics, offering insights into plant survival in extreme environments and therapeutic potential.

Research interests

Bimal's primary research interests include the molecular and ecological study of high-altitude medicinal plants, with a focus on understanding their genetic and physiological adaptations to harsh environments. His work integrates plant genomics with molecular phylogeny analysis to explore how these plants adapt to extreme climatic conditions. He also investigates the potential therapeutic benefits of these plants and their conservation in the face of climate change.

Teaching and mentoring

Along with his research, Bimal serves as a Lecturer at Sherubtse College, Royal University of Bhutan, where he teaches courses in plant diversity, plant molecular biology, ecophysiology,

and genomics. He is passionate about mentoring students and guiding them in their academic and research pursuits. Through his teaching, Bimal encourages the next generation of plant Biologists to explore the potential of medicinal plants and their role in sustainable development.

Research experience

Bimal's doctoral research has significantly advanced the understanding of the molecular mechanisms underlying the adaptation of high-altitude plants to extreme environments. His studies also explore their potential use in biomedicine. He has collaborated with various national and international institutions, contributing to the field of plant genomics and plant flow cytometry. Bimal has published research articles in leading journals and presented his work at several international conferences.

Publications and contributions

Bimal has published papers on plant genomics, medicinal plants, and the conservation of high-altitude medicinal plants. His contributions are widely recognized in the scientific community, and his work continues to influence both academic and practical applications in the fields of plant biology and conservation.

Future directions

Bimal's future research aims to deepen the exploration of genomic diversity in high-altitude medicinal plants and their role in sustaining biodiversity in the Himalayan region. He plans to expand his work on the ecological and genomic aspects of these plants, focusing on their conservation and potential medicinal uses.

i. **List of publications in peer-reviewed journals:**

a. **Chetri, B. K.**, Sonu, S. S., Shelke, R. G., Mitra, S., & Rangan, L. (2025) *De novo* plastome analysis of *Elsholtzia blanda* and comparative insights across the *Elsholtzia* genus *National Academy Science Letters*. https://doi.org/10.1007/s40009-025-01633-2

b. **Chetri, B. K.**, Senapati, A., Shelke, R. G., Mitra, S., & Rangan, L. (2024). Untangling the evolutionary tapestry: plastome insights unveiled from *Sieruela rutidosperma* to *Cleomaceae*. *Biology Bulletin*, 51(Suppl. 1), S44–S51. https://doi.org/10.1134/S1062359024608152

c. **Chetri, B. K.**, Sonu, S. S., Shelke, R. G., Dierckxsens, N., Mitra, S., & Rangan, L. (2025) The evolutionary landscape of mitogenomes: insights from *Elsholtzia blanda* and comparative analysis of ten related species *Evolutionary Genetics and Genomics* https://doi.org/10.1016/j.egg.2025.100328.

d. **Chetri, B. K.**, Sonu, S. S., Shelke, R. G., Mitra, S., & Rangan, L. (2024). *De novo* sequencing of *Drymaria villosa* and comparative analysis of plastome in Caryophyllaceae across 23 species *Molecular Biotechnology*. https://doi.org/10.1007/s12033-024-01317-0

e. **Chetri, B. K.**, Senapati, A., Shelke, R. G., Mitra, S., & Rangan, L. (2024). Phylogenetic exploration, codon usage bias, and genomic divergence in *Hydrocotyle*: a comparative plastome study across different geographical locations *Genetica*, 152, 199–209. https://doi.org/10.1007/s10709-024-00213-4

f. **Chetri, B. K.**, Senapati, A., Shelke, R. G., Mitra, S., & Rangan, L. (2024). Untangling the evolutionary tapestry: plastome insights unveiled from *Sieruela rutidosperma* to *Cleomaceae*. *Biology Bulletin*, 51(Suppl. 1), S44–S51. https://doi.org/10.1134/S1062359024608152

g. Senapati, A., **Chetri, B. K.**, Mitra, S., Shelke, R. G., & Rangan, L. (2023). Decoding the complete chloroplast genome of *Cissus quadrangularis*: Insights into molecular structure, comparative genome analysis, and mining of mutational hotspot regions. *Physiology and Molecular Biology of Plants*, 29(5), 709–724. https://doi.org/10.1007/s12298-023-01312-w.

h. Rabha, J., **Chetri, B. K.**, Das, S., & Jha, D. K. (2023). In-vitro and in-silico evaluation of antimicrobial and antibiofilm secondary metabolites of a novel fungal endophyte, *Albophoma sp. BAPR5*. *South African Journal of Botany*, 158, 347–368. https://doi.org/10.1016/j.sajb.2023.05.033.

i. Hegde, G. M., Malligawad, L. H., Sreenivasa, M., & **Chetri, B. K.** (2022). Role of plant growth-promoting microbes in the control of fungal foliar diseases of tomato under protected cultivation. *Egyptian Journal of Biological Pest Control*, 32(1), 1–10. https://doi.org/10.1186/s41938-022-00606-7.

j. Sharma, K., Saikia, A., Thapa, P., & **Chetri, B. K.** (2022). Aboveground biomass and carbon stock assessment in the eastern Himalayan foothills along the Indo-Bhutan border. *Australian Geographer*, 0(0), 1–24. `https://doi.org/10.1080/00049182.2022.2092992`.

ii. **Manuscripts under revisions:**

a. Chetri et al. "Deciphering the plastome of *Bergenia ciliata*: comprehensive analysis of structure, codon usage pattern, and phylogenetic relationships within the medicinal family *Saxifragaceae*" – *Acta Physiologiae Plantarum.*

b. Chetri et al. "Insights from the mitochondrial genome of *Thladiantha cordifolia*: codon usage bias, RNA editing, and phylogenetic relationships within *Cucurbitaceae*" – *Journal of Plant Biochemistry and Biotechnology.*

c. Chetri et al. "*De novo* complete plastome assembly of *Thladiantha cordifolia*: inversions, adaptive traits, and phylogenetic relationships" – *Discover Plants.*

d. Chetri et al. "*De novo* plastome analysis of *Elsholtzia blanda* and comparative insights across the *Elsholtzia* genus" – *National Academy Science Letters.*

iii. **Manuscripts submitted/under review:**

a. Chetri et al. "Assembly and comparative chloroplast genome analyses within *Moraceae*: unveiling evolutionary insights and phylogenetic relationships of *Ficus* and *Streblus*" – *Trees.*

b. Chetri et al. "Comparative plastome analysis of *Apocynaceae* with *de novo* sequencing of *Thevetia peruviana*: insights into evolution and phylogeny" – *Tropical Plant Biology.*

c. Chetri et al. Nuclear DNA content analysis of herbal plants from Bhutan: new records, and a reference standard use comparison – *Protoplasma.*

d. Chetri et al. Herbal diversity in Bhutan's unexplored landscapes: ethnobotanical insights, unlocking treasures, and conservation perspective – *Journal of Ethnopharmacology.*

iv. **Book chapter publication:**

a. Rangan, L., **Chetri, B. K.**, Senapati, A., Basak, S., & Shelke, R. G. (2024). Plant DNA analysis: Estimation of nuclear DNA content in plant homogenates. In R. C. Sobti, A. Krishan, & D. K. Agrawal (Eds.), *Flow Cytometry.* Springer, Singapore. `https://doi.org/10.1007/978-981-97-4553-1_10`

b. **Chetri, B. K.**, & Choden, D. (2022). Progress in pesticides bioremediation from South Asian countries: Challenges and way forward. In S. Siddiqui, M. K. Meghvansi, & K. K. Chaudhary (Eds.), *Pesticides Bioremediation*. Cham, Springer International Publishing. https://doi.org/10.1007/978-3-030-97000-0_19

c. **Chetri, B. K.**, Rinchen, N., & Wangchuck, K. (2022). Ethnobotanical wealth of home gardens. In *Research Anthology on Recent Advancements in Ethnopharmacology and Nutraceuticals*. IGI Global. DOI:10.4018/978-1-6684-3546-5.ch031

d. Hegde, G. M., Aditya, S., Wangdi, D., & **Chetri, B. K.** (2022). Mycoremediation: A natural solution for unnatural problems. In *Fungal Diversity, Ecology and Control Management*. Fungal Biology. Springer, Singapore. https://doi.org/10.1007/978-981-16-8877-5_17.

e. **Chetri, B. K.** (2013). Ethnobotanical use of *Parassassafras confertiflora* (Meisner) Long in Serthi Gewog. In *Advances in Environment*.

v. **Conferences attended/Proceedings:**

a. Chetri et al. (2023). Paper titled "Ethnomedicinal study of southeastern foothills of Bhutan: a case of Pemathang and Phuntshothang gewog" presented at the *International seminar on challenges & opportunities of medicinal plant-based industries in BIMSTEC countries* organized by SART, Date: 26–27 August 2022 (Best oral presentation).

b. Chetri et al. (2023). "Mapping genome size variation in medicinal plants of southeastern Bhutan: prospects for genomic study" presented at the *International conference on biodiversity, food security, sustainability and climate change* (ICBFSCC-2023), Assam Agriculture University, Jorhat, Assam, Date: 25–28 April 2023.

c. Chetri et al. (2023). "Herbal diversity in Bhutan's unexplored landscapes: ethnobotanical insights, unlocking treasures, and conservation perspective" presented at the *international conference on unraveling Indian knowledge across Asia* (UNIKAA-2024) held at IIT Guwahati, Date: 3–5 October 2024 (Best oral presentation).

vi. **Workshops and trainings:**

a. International faculty development program on Molecular techniques and Bioinformatics tools. 17-26 Dec, 2024. University of Agricultural Sciences, Dharwad, Karnataka India.

b. International (SAARC) Youth Scientific Conference (IYSC) on Science and Technology for Prosperity: "Connecting Lives with Land, Water and Environment" from 5-6 June, 2019 in Kathmandu, Nepal.

c. RETA6433: SASEC Research and Training Network 6th Regional Workshop, Sheraton Grande Sukhumvit Hotel, Bangkok 10110, Thailand, 15-16 December 2016.

d. Winter Exchange Program at Kyoto, between Kyoto University, Japan and Sherubtse College, Royal University of Bhutan, from 17th Jan to 2nd Feb, 2017.

e. Software training on ArcGIS and R Studio at North-East Hill University, Shillong, India, 20-28 Dec, 2018.

f. Training Workshop on Himalayan Glaciology and Glacio-Hydrological Modeling, 2016.

g. Training to Community e-Centres (CeCs) Operators on e-services, marketing, and village bazaar developed for the benefit of village community as part of Government initiatives on e-Services, College of Science and Technology, Phuentsholing Bhutan, 15-19 February, 2016.

h. Training to Community e-Centres (CeCs) Operators on SASECRTN portal management, e-services, and village bazaar developed for the benefit of village community as part of Government initiatives on e-Services, Sherubtse College, Kanglung Bhutan, 5-6 November, 2016.

i. Training Workshop on Application of Geospatial Technology in Climate Change Research, Sherubtse College Bhutan, 2015.

j. Basic Pranic Healing Course, Sherubtse College, 2014.

k. Universal Human Values and Professional Ethics, IIIT Hyderabad, India, 2013.

l. Training workshop on Application of Social Science Research, Sherubtse College, Bhutan, 2011.

m. ToT workshop on Global Skills, Samdrupjhonkhar, Bhutan, 2011.

n. ToT workshop on Life Skills Education by Ministry of Education, 2010.

o. Sensitization workshop on Gender Based Violence for Educationists by RENEW with financial support from SNV and Save The Children, Thimphu, Bhutan, 2006.

vii. **Awards and achievements:**

a. **Best Oral Presentation** (2022), *International Seminar on Challenges and Opportunities of Medicinal Plant-Based Industries in BIMSTEC Countries*, August 26–27, 2022.

b. **Certificate of Reviewing**, *Saudi Journal of Biological Sciences*, Elsevier.

c. **ASEAN-India Science, Technology & Innovation Cooperation Research and Training Fellowship** (2019), *Research and Training Fellowship for Developing Country Scientists (RTF-DCS) Scheme*.

d. **India Science Research Fellowship Programme** (2018), Funded by the *Department of Science and Technology (DST), India*, awarded under the *India Science and Research Fellowship (ISRF) 2017–18 Programme* to pursue research in frontier/advanced areas of science, including medicine and agriculture, for a period of 3–6 months by *CCSTDS, DST India*.

viii. **Certifications:**

a. *PH525.5x Introduction to Bioconductor*, an online course offered by HarvarX, supported by ADB to Royal University of Bhutan, 19 April 2024.

b. *Flow Cytometry Data Analysis and Presentation*, 24–27 August 2022, organized by Flowcytometry Solutions (P) Ltd, Jaipur, India.

c. *Translational Genomics in Soybean*, organized by Biogene, 27 June 2022.

d. *Tissue Culture of Perennial Fruits/Cash Crops: Significance, Best Practices, and Way Forward*, organized by APAARI, BCIL, and APCoAB, 30 June 2022.

e. *Translational Genomics inSoybeans: How Genomic Information Can Be Made Relevant to Breeders*, organized by APAARI, BCIL, and APCoAB, 27 June 2022.

f. *Environmental Genomics and Genome Editing*, organized by the Centre for the Environment under the Technical Education Quality Improvement Programme (TEQIP), sponsored by the Ministry of Human Resource Development, Government of India, 23–27 February 2021.

g. *Functional Starches for Improving Food Products*, organized by PFNDAI, 7 July 2022.

h. *Mental Health Care and Biostatistics*, organized by IIT Guwahati, Dept. of Electronics and Electrical Engineering, 30 May–15 June 2022.

i. *Medicinal Plants in Eastern India: Constraints and Prospects*, organized by ICAR-Research Complex for Eastern Region, 26 August 2021.

j. *Hands-on Training on R-Programming*, organized by Dr. M.G.R Educational and Research Institute, 25 September 2020.

k. *Fundamentals of Artificial Intelligence and Its Application in Education*, organized by the Centre for Artificial Intelligence in Education, School of Education, Ministry of Education, Government of India, 28 December 2020.

l. *Elementary Bioinformatics*, organized by the School of Biosciences, IMS Ghaziabad, University Courses Campus, 5 July 2020.

m. *Research4Life MOOC (AGORA/HINARI/OARE)*, organized by FAO, held from 11 November to 15 December 2019.

n. *Fundamentals of Information Literacy and Access to Global Online Research in Agriculture (AGORA)*, organized by FAO, held from 23 October to 5 November 2017.

o. *Agriculture and the World We Live In*, Massey University, University of New Zealand, 19 December 2017.

p. *Education in a Changing World*, Open Universities Australia, 6 February 2018.

q. *Teaching Adult Learners*, Open Universities Australia, 6 February 2018.

ix. **Sequence submitted to NCBI**

a. Chloroplast genome of *Bergenia ciliata*: OR668896

b. Chloroplast genome of *Drymaria villosa*: OR790517

c. Chloroplast genome of *Elsholtzia blanda*: OR701859

d. Chloroplast genome of *Hydrocotyle himalaica*: OR790518

e. Chloroplast genome of *Thladiantha cordifolia*: OR668895

f. Mitochondrial genome of *Elsholtzia blanda*: PP755340

g. Mitochondrial genome of *Thladiantha cordifolia*: PP755341

Referee

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