



INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI  
SHORT ABSTRACT OF THESIS

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Thesis Title: **MITOCHONDRIAL GENOME INFORMATICS OF SELECTED SERI-BIORESOURCES AND DATABASE DEVELOPMENT**

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Assam is one of the North eastern states of India known for its rich biodiversity of seri-bioresources. The present study deals with molecular characterization of Seri-bioresources of Assam through DNA barcoding, mitochondrial genome sequencing of silkworms, and development of Seri-related web-resources. Eighteen indigenous seri-bioresources of Assam, India were barcoded using different barcode markers (*COI*, *matK*, *rbcl*, *trnH-psbA*, *ITS*, *ITS2* and *16S rRNA*) which is the first report on muga and eri silkworms, host plants, pests and pathogens. All the barcode sequences are available in NCBI GenBank Database. Further, mitochondrial genomes of two silkworms- *Antheraea assamensis* (Accession no: KU379695) and *Cricula trifenestrata* (Accession no: KY644697) (Order: Lepidoptera; Family: Saturniidae) were sequenced and their comparative analysis with other lepidopteran insects was carried out in terms of in-depth study of nucleotide substitution patterns, conservation regions and evolutionary relationships. The barcoding and mitochondrial genomic studies will be useful for the researchers working in the exploration of seri-resources as well as future evolutionary and phylogenetic studies. Finally, two seri-related web-resources were developed which include 'SeriPort'- a web-portal for seri-informatics databases and 'Seribase'- a seri-bioresource database. These web-resources are freely accessible through the URL- [www.seriport.in](http://www.seriport.in) and [www.seribase.in](http://www.seribase.in), respectively. These databases will act as supportive platforms to bridge the gap between sericulture and seri-informatics.