MOLECULAR PHYLOGENETICS COURSE

Organised by the Department of Botany, University of Calicut, Malappuram, Kerala

23rd – 27th September 2019

Overview

Inferring natural relationships among organisms through phylogenetic analyses has become an important tool for various studies of biodiversity research, from character evolution, developmental genetics, classification, species delimitation, biogeographic studies and others. The phylogenetics course is focussing on molecular data, their acquisition/retrieval and analysis and the interpretation of tree topologies, with case studies covering various aspects. The course is a hands-on training course focussing on applied issues of molecular sequence data analysis.

Tentative dates	23rd–27thSeptember 2019
Objectives	i) Theoretical aspects of phylogeny methods ii) Sequence acquisition and retrieval iii) Sequence alignment iv) Knowledge of basics and advanced topics in phylogenetics v) Practical skills to perform and analyse phylogenetic trees
Host institute / venue	Department of Botany, University of Calicut, Kerala
Participants	Number limited to 25
You should attend if...	➢ You are a botanists interested in plants and unravelling their natural histories and relationships. ➢ You are a student/research scholar/faculty from academic institution interested in learning how to do investigate natural plant relationships through generation of phylogenetic hypotheses.
Course registration fees	The participation fees for attending the course is as follows: ➢ Faculty: Rs. 5000 ➢ Research scholars/ students from other institutes in India: Rs. 4000 ➢ Research scholars/ students from host Institute: Rs. 2000 ➢ Participants from abroad : $ 250

Registration process	**Step 1**: GIAN Portal Registration: Register in the GIAN portal i.e. http://www.gian.iitkgp.ac.in/GREGN/index by paying Rs. 500/- online. Registration to this portal is the one-time affair and will be valid for the lifetime of GIAN. Please note that course fee is separate. **Step 2**: Login to the GIAN portal with the registered User ID and password. Choose for the course registration option. Select the course titled "Molecular Phylogenetics" form the list and click the "Save" option. Confirm your registration by clicking the suitable option. **Step 3**: Course shortlisting: Candidates will be intimated through e-mail regarding their selection. Last date of application: **30 July 2019.** **After registration in GIAN portal, please send your brief resume to santhoshnampy2019@gmail.com before 30 July 2019, to facilitate the short listing of candidates.** **Step 4**: Fee remittance: Once you receive the intimation from the Course Coordinator, the fee (as applicable) need to be paid. The participants will be provided with accommodation (if available) on payment basis. **Mode of payment**: **Mode of payment will be intimated to the shortlisted candidates.** **Step 5**: The registration form (Given in page no. 5 of this brochure) should be filled and scanned copy of the same to be send to Course Coordinator only after receiving intimation to the short listed candidates **Course Co-ordinator** **Dr. Santhosh Nampy** Professor & Head Department of Botany University of Calicut, Thenhipalam Malappuram, Kerala- 673632, India Phone: 9447 461 622 E-mail: santhoshnampy2019@gmail.com, cue3974@uoc.ac.in
Accommodation	The participants may be provided with accommodation at guest house, University of Calicut, on payment basis.

THE FACULTY

Host Faculty

Dr. Santhosh Nampy

Dr. Santhosh Nampy is a Professor at Department of Botany, University of Calicut. His research interests include taxonomy and phylogeny of Commelinaceae, Gesneriaceae, Gentianaceae and the genera *Arisaema* (Araceae), *Sonerila* (Melastomataceae) and *Utricularia* (Lentibulariaceae) and floristics. He is recipient of BOYSCAST Felllowship (DST, Government of India), Research Award (UGC, Government of India) and Sibbald Fellowship (Royal Botanic Garden, Edinburgh). Under Bilateral Exchange Programme of Indian National Science Academy, Government of India he worked at Institute of Botany, The Chinese Academy of Sciences. He has successfully completed many projects funded by SERB, UGC and KSCSTE. He is the Executive Editor of International Journal *Rheedea*.

Foreign Guest Faculty

Dr. Michael Möller

Dr. Möller is an Evolutionary Botanist interested in unravelling evolutionary processes and the classification of plant species. He applies holistic approaches to taxonomy combining morphological and molecular data, whereby molecular phylogenetic frameworks are the cornerstone underpinning taxonomic decisions and modern classification systems. Dr. Möller is also interested in linking phylogenies to infer morphological shifts and investigate the genetics underlying these developmental changes. His work focuses primarily, but not exclusively, on Old World Gesneriaceae. He is the Principal Investigator and Senior Scientific Officer with the role of Molecular Systematics and Cytology at the Royal Botanic Garden Edinburgh (RBGE) and is an expert in the family Gesneriaceae with more than 90 publications on the family. He has extensive experience of over 20 years in acquiring and analysing molecular data and has published around 50 publications dealing with phylogenetic analyses.

TENTATIVE LECTURE PLAN (23rd–27th September 2019)			
	Session	**Duration**	**Teaching faculty**
DAY 1	**Lecture 1:** Introduction to phylogenetic methods, to provide an overview of the methods and programmes used in molecular phylogenetic analyses.	**1 hr**	**Dr. M. Möller**
	Lecture 2 & 3: Trees and tree thinking, building trees, reading trees, characters, homology.	**2 hrs**	**Dr. S. Nampy**
	Tutorial 1: Overview on the computing facility required for the successful implementation of molecular phylogenetic protocols	**1 hr**	**Dr. S. Nampy**
	Tutorial 2: Searching for most parsimonious trees, rooting; familiarisation with parsimony programmes and basic analyses.	**1 hr**	**Dr. M. Möller**
DAY 2	**Lecture 4**: Parsimony, consensus and tree evaluation, confidence indices; covers the basics of generating and handling phylogenetic trees.	**1 hr**	**Dr. M. Möller**
	Lecture 5: Sampling, sequence retrieval and matrix building: molecular data–genes and regions; deals with the characteristics, origin, generation and handling of molecular sequence data.	**1 hr**	**Dr. M. Möller**
	Tutorial 3 & 4: Sequence retrieval and matrix building, confidence indices; from sequence files to tree building and statistical confidence indices.	**2 hrs**	**Dr. S. Nampy**
DAY 3	**Lecture 6**: Introduction to maximum likelihood phylogeny reconstruction.	**1 hr**	**Dr. M. Möller**
	Lecture 7: Introduction to Bayesian phylogeny inference reconstruction.	**1 hr**	**Dr. M. Möller**
	Tutorial 5 & 6: Setting-up and running Likelihood and Bayesian analyses.	**2 hrs**	**Dr. S. Nampy**
DAY 4	**Lecture 8**: Advanced aspects of phylogenetic analyses, including alignment gap coding, handling of ambiguous data, substitution saturation, long-branch attraction, and combining data from different sources.	**1 hr**	**Dr. M. Möller**
	Lecture 9: Advanced aspects, dating; estimating the diversification ages of lineages	**1 hr**	**Dr. M. Möller**
	Tutorial 7 & 8: Advanced aspects, combining data and dating; including running BEAST analyses.	**2 hrs**	**Dr. M. Möller**
DAY 5	**Lecture 10**: Advanced aspects, biogeography, ancestral area reconstructions etc.	**1 hr**	**Dr. M. Möller**
	Tutorial 9 & 10: Advanced aspects, biogeography; BioGeoBearsfrom R, RASP.	**2 hrs**	**Dr. S. Nampy**

GIAN COURSE REGISTRATION FORM

(23rd September 2019 to 27th September 2019)

Name (In block letters): .....

Designation: .....

Organization: .....

Mailing address: .....

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Email ID: .....

Mobile no.: .....

Fee payment details

Amount Rs: ..... Transaction No. (e-transfer/ RTGS/ NEFT): .....

Demand Draft No. (If paid by DD): ..... Date: .....

Participant category: Faculty/ Research scholar/ Student

Accommodation required: Yes/ No

Food habit: Veg/ Non-veg

Place: .....

Date: ..... Signature of the applicant