

## THE USE OF MOLECULAR GENETICS AND GENOMICS TOOLS IN BIODIVERSITY CONSERVATION

**COURSE CODE: 174046H07**

### OVERVIEW

Many species of plants and animals are facing the risk of extinction due to a variety of natural and anthropogenic causes including habitat loss, over-harvesting, pollution and climate change, making the loss of biological diversity as one of the most important concerns of this century throughout the world. The current rate of biodiversity loss is unprecedented and valuable genetic resources are being lost at an alarmingly high rate. Therefore, effective strategies to conserve these genetic resources are urgently needed to maintain healthy ecosystems with inter-dependent species to meet societal needs in a sustainable manner. In recent years, molecular and genomic techniques have become essential tools in conservation planning for the identification of ecological interactions and genetic variations at various hierarchies ranging from populations through species and communities. Thus, training manpower in molecular ecology and conservation genetics/genomics is vital for the successful planning and implementation of conservation initiatives. The proposed course will focus on the use of molecular and genomic tools for analyzing populations of critically important species at a variety of geographical scales covering several topics including population differentiation, landscape genomics, ecological interactions, phylogenetics, phylogeography and metagenomics. This course is specifically designed to teach key principles in population and conservation genetics & genomics and provide hands-on training in experimental design, sample collection, molecular techniques and data analysis. The followings are the course objectives to provide training in:

1. Theories in population genetics and evolutionary biology applicable to conservation genetics.
2. Identification of conservation genetic issues and developing suitable solutions to address the issues.
3. Sample collection and data analyses.
4. Molecular genetics and genomic marker systems.
5. Molecular biology laboratory skills.
6. Genotyping and sequence data analysis.
7. Scientific communication of results

<b>Course</b>	<b>The Use of Molecular Genetics and Genomics Tools in Biodiversity Conservation</b> <b>22-26 JULY, 2019</b>
<b>Who should attend ....</b>	Participants from Industry, Research Organisations, Faculty and Students from all over the world interested are welcome to register for the course. <a href="http://www.gian.iitkgp.ac.in/GREGN/index">http://www.gian.iitkgp.ac.in/GREGN/index</a>
<b>Fees</b>	<b>The participation fees for attending the course are as follows:</b> <b>Abroad Participants :</b> US\$ 200 <b>Students (U.G. and P.G.):</b> INR 700* <b>Ph.D. &amp; Postdoc. Fellows:</b> INR 1000* <b>Faculty from academia:</b> INR 1500 <b>Industry Participants :</b> INR 5000 <b>*Fee for SC/ST candidates : 50% waived off.</b> Hotel accommodation will be arranged on payment basis at nearby places, if requested.

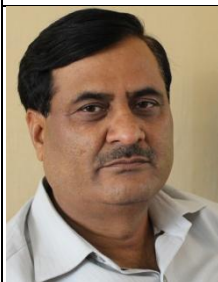
## The Faculty



Prof. Selvadurai Dayanandan is Professor in the Department of Biology, Concordia University, Montreal, Quebec, Canada. His research focus is on gaining insights into the processes underlying the origin and maintenance of biological diversity with specific focus on the ecology, evolution and genomics of forest trees, and understanding the causes and consequences of deforestation and forest fragmentation. He is a recipient of Postdoctoral training at University of Alberta, Canada and University of Massachusetts, Boston, Massachusetts, USA.

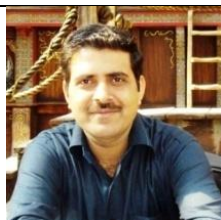
He has supervised 10 Ph. D., 24 UG and PG students and 16 Exchange students. He has contributed over 50 articles in various scientific journals (Scholar citations: 4705; h index: 25, i10 index 31) in the area of biodiversity. 65 abstracts presented and published in various conference proceedings. Authored 2 books and many chapters. He received several awards and honors namely Izzak W. Killam Postdoctoral Fellowship, University of Alberta, Deland Award, Harvard University, MAB Young Scientists Award, UNESCO/Paris, Professional society activities, Associate Editor, Botany (Formerly Canadian Journal of Botany), Webmaster, Canadian Botanical Association 2007- 2017, Board of Directors, Canadian Botanical Association 2006-12,

Dayanandan has been Vice-President, Canadian Botanical Association (2005-06). He received more than 24 research grant from International agencies and Research Centre memberships for Quebec Centre for Biodiversity Sciences (QCBS), FRQNT funded (\$3,420,000 for 6 years: 2013-2019) network Centre for Structural and Functional Genomics.



Mohammed Latif Khan is Professor in the Department of Botany, Dr. Harisingh Gour Vishwavidyalaya, Sagar India. He is a plant ecologist and conservation biologist, obtained his doctoral degree from North Eastern Hill University, Shillong, India. He has supervised ten graduate and sixteen Ph. D. theses. He has contributed 150 peer-reviewed papers (citations - 3070, h-index - 30, i10 index - 56), 2 co-edited books and 47 conference papers, invited presentations, and lectures. Dr. Khan is a recipient of Nanda Memorial Young Scientist Medal (1995). He is a recipient of

DST-BOYSCAST (1995-96) and DBT-Overseas (2005 & 2008) fellowships and worked at University of Massachusetts, Boston, USA, and Concordia University, Montreal, Canada respectively. He also received the short term fellowship from Shastri Indo Canadian Institute under the Mobility Programme (2018). He is the Fellow of National Academy of Agricultural Sciences (NAAS), National Environmental Science Academy (NESA), National Institute of Ecology (NIE), International Society for Tropical Ecology, Rangeland Management Society and International Society for Environmental Botanists,. He is also the Vice President of National Institute of Ecology. Dr. Khan is also the member of CEM, IUCN. He has received 39 research grants from various funding agencies e.g. DST, DBT, CSIR, MoEF, IIRS, NRSA, ICAR, ATREE, GBPIHED, MacArthur Foundation, UNESCO etc.



Presently, Dr. Ashwani Kumar is an Assistant Professor in the Department of Botany, Dr. Harisingh Gour Vishwavidyalaya, Sagar India. He obtained his Ph.D. in Biomass and Bioenergy from IIT Delhi, India. His research dealt with plant microbe interaction, plant abiotic stress, and metagenomics. He received several award; Shastri Mobility Program from SICI (2018-19), Commonwealth Fellowship, Claude Leon Found.

& National Research Foundation Fellowship & Rhodes University Postdoctoral Fellowship. He is life member of National Institute of Ecology, Biotech Research Society of India, and International Society of Environmental Botanists, and Affiliate member of Microbiology Society and member of CEM, IUCN. He has published 45 articles in Journals (Citation: 2510, h-index 19, i10 index 26), 15 Book chapters and presented his research in 35 Conferences.



## Course Co-ordinators

**Professor M. L. Khan  
Dr. Ashwani Kumar**

**Department of Botany,  
School of Biological Sciences,  
Dr. Harisingh Gour  
Vishwavidyalaya, Sagar -  
470003 (M.P.), India.**

**Mobile: +91-9425613661(MLK)  
+91-7697432012 (AK)**

**Email: [khanml61@gmail.com](mailto:khanml61@gmail.com)  
[ashwaniitd@hotmail.com](mailto:ashwaniitd@hotmail.com)**

**Information visit:  
[www.dhgsu.ac.in/news.php](http://www.dhgsu.ac.in/news.php)**