

## INFORMATIONAL MEETING

Friday, Sept.3, 2021—7.00 PM  
(IST)

Links:

### Zoom Meeting

<https://us02web.zoom.us/j/9464504891?pwd=T3Z1RFdpSFILbmV2L0E1QVRackU1UT09>

Meeting ID: 946 450 4891  
Passcode: bioscience

### YouTube

<https://youtube.com/channel/UCoye1-LC0Gu02r4UtM5alcg>

## COURSE REGISTRATION

Registration Form and Brochure shall be forwarded soon after the Informational Meeting.

## LAST DATE FOR REGISTRATION

SEPTEMBER 20, 2021

## UCC—IUP MOU

Union Christian College, Aluva and Indiana University of Pennsylvania, USA have signed an MOU in the spirit of promoting International friendship by supporting intercultural activities and projects between the United States and India. This project is a part of the activities planned in this direction.



## Online Certificate Course on Gene Editing Tools in Medicine & Biotechnology

23rd Oct. - 19th Dec. 2021

### Course Details

**Eligibility** - B.Sc., M.Sc., Ph.D (Biological Sciences)  
(Open for Students & Faculty from Institutes in India only)

**Days** - Saturdays and Sundays (7.00 pm to 8.30 pm)

**Mode** - Online

#### Course Fees:

Rs.5000 for UC College Students & Faculty  
Rs.10000 for other Institutions/Colleges

(Payment to be made only by selected candidates)

**Mode of Selection** - Based on Merit /Research Interest

**Total number of Seats** - 40

(30 for UC College and balance to others)

#### FACULTY INSTRUCTOR:

**N. Bharathan, PhD,**

Indiana University of Pennsylvania, Indiana, USA.

#### COURSE CO-ORDINATOR

**Dr. Sareen Sarah John.**

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#### PROGRAMME ADVISOR

**Dr. Susan Eapen**

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Union Christian College, Aluva

THE TRUTH SHALL MAKE YOU FREE



&



**IUP** Indiana University  
of Pennsylvania

## INFORMATIONAL MEETING ON CERTIFICATE COURSE FRIDAY 3RD SEPT., 2021—7.00 PM (IST)

The **Department of Biosciences, Union Christian College, Aluva** is offering an Online Certificate Course in Gene Editing Tools in Medicine & Biotechnology in association with **Department of Biology, Indiana University of Pennsylvania, Indiana, PA 15705, USA.** Starting from 23rd Oct. to 19th Dec. 2021 (Saturdays & Sundays).

### Speaker

**N. Bharathan, PhD**

Professor & Chair, Biology  
Indiana University of Pennsylvania



# Online Certificate Course on Gene Editing Tools in Medicine & Biotechnology

## Course Description

As advances in biotechnology and gene editing gain momentum, so do our understanding of the principles and techniques governing the gene editing tools. The course will describe in detail the development and application of several gene editing technology like CRISPR in agriculture, animal sciences, human health, and environment. A wide variety of applications of editing process including basic biological research, development of biotechnology products, and treatment of diseases will be discussed.

## Student Learning :

1. Understand the fundamental properties of different types of genome editing methods and their molecular mechanisms.
2. Understand the basic mechanisms of genome editing tools like restriction enzyme digestion, Zinc finger nucleases, TALENs gene editing, and CRISPR-Cas9 Gene editing.
3. Apply basic genome concepts to the understanding of how do gene editing works?
4. Utilize basic mechanisms of CRISPR-Cas9 in genome engineering of prokaryotes, plants, animals, and humans and the role it plays to study genes, cellular function, disease progression & therapeutic applications.

## Course Modules

**Introduction:** What is Genome Editing?

**Module 1 , Module 2** (Types of Gene Editing tools)

**Module 3:** (Application and operation of CRISPR/Cas9 system as a genome editing tool) - (CRISPR Application in Agriculture/Humans)

**Module 4:** (CRISPR/Cas9 in Disease Models)

**Module 5:** (Unusual Applications of CRISPR)

**Module 6:** (CRISPR Ethics: Moral Considerations for Applications of CRISPR)



**Dr. Narayanaswamy Bharathan**

## Education

BS - 1977 G. B. Pant University of Agriculture and Technology, India, Major: Plant Protection.

MS - 1980 G. B. Pant University of Agriculture and Technology, India, Major: Plant Pathology.

PhD - 1989 University of Maine, Orono, Maine, Major: Molecular Virology.

## Field

Plant-microbe interactions.

## Interests

Research interests include basic and applied aspects of plant-microbe interactions, fungal genetics, and plant and fungal molecular virology. Long-term goals include isolation and characterization of virus genes; production of transgenic plants and identifying extra-chromosomal genetic elements from economically important plant viruses and plant pathogenic fungi and their role in conferring race specificity, pathogenicity, and/or hypovirulence; and potential use of specific cloned nucleic acid sequences from hypovirulent strains in the biological control of the fungus.

## Current Research Projects

Characterization and molecular analysis of the genome of the Tomato Mosaic virus (ToMV) using reverse transcription PCR.

Comparative analysis of DNA homology to establish taxonomic relationships of fungi. The specific genes, total nuclear DNA, and/or plasmids of various species or isolates could be compared by sequencing or nucleic acid hybridization.

Past experience with *Rhizoctonia solani* system suggests that transposable elements (Ty) exist in plant pathogenic fungi, and they could be involved in the activation and inactivation of genes for pathogenicity, or race specificity. Filamentous fungi generally contain a small fraction of repetitive sequences, which are primarily composed of genes for rDNA, but which also include Ty elements. If the homology that exists between Ty elements in yeast and some higher eukaryotes is general, it will be possible to detect these elements in filamentous fungi by searching for homology between the non-ribosomal repetitive DNA and a cloned Ty element. Alternatively, since chromosomal location of at least some copies of Ty will differ among individuals, such elements could be detected by RFLPs.

**YOU ARE INVITED TO THE  
INFORMATIONAL MEETING  
ON CERTIFICATE COURSE  
FRIDAY 3RD SEPT., 2021—7.00 PM (IST)**

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