MHRD – Global Initiative on Academic Network (GIAN)

Transgenic Animal Technology: Basics and Methods

Department of Animal Biology, School of Life Sciences,
University of Hyderabad, INDIA.

19th July to 01st August, 2018

Overview

Understanding the functional relevance of genes in normal and diseased conditions in the humans is very difficult and require animal models in which the gene(s) of interest are manipulated. The manipulation can be a simple polymorphism or deletion of a part or whole gene to achieve abolishing the gene expression or introducing a copy of the gene to accomplish overexpression. Such manipulations are best possible by transgenesis in animal models. In the current era of molecular biology, the functional significance of a gene is being undoubtely proved by generating animals models in which the gene is overexpressed or knocked down. Intensive training programmes on the strategies to generate transgenic animal models will provide a platform for Indian researchers to conduct research using the best relied model i.e the transgenic animal model..

Course Objectives

I. How to choose vectors for transgenesis
II. Methodology of cloning the vectors and their subsequent use for transgenesis
III. Overview of the aspects in generating transgenic animals by manipulating spermatogonial stem cells.
IV. Methodology to generate transgenic small animals using non surgical procedures such as electroporation.
V. Use of CRISPR/Cas9 technology to generate transgenic / knock out animal models.

Course Details

Day	Title
July 19	: Introduction to gene manipulation
July 20	: Bioinformatics approach to design vectors for transgenesis
July 21	: Promotors, Vectors, general and cell specific construct design
July 22	: Validation of the constructs: In vitro and In vivo
July 23	: Other approaches of transgenesis
July 24	: Micromanipulation of human gamates
July 25	: Testicular electroporation as a method for transgenesis
July 26	: Blastocyst preparation for transgenesis
July 27	: Transgenesis in large animals
July 28	: ES cell technology – 1
July 29	: ES cell technology – 2
July 30	: Emerging technologies in transgenesis
July 31	: Transgenesis in the Indian context
Aug 01	: Presentations by participants

Who can attend

- Executives, engineers and researchers from manufacturing, service and government organizations including R&D laboratories.
- Student students at all levels (BTech/MSc/MTech/PhD) or Faculty from reputed academic institutions and technical institutions.

How to apply : Interested candidates must login GIAN-MHRD website (http://www.gian.iitkgp.ac.in/) to fill application. Please submit your detailed resume along with statement of purpose.

For more details contact : sureshsl@uohyd.ernet.in

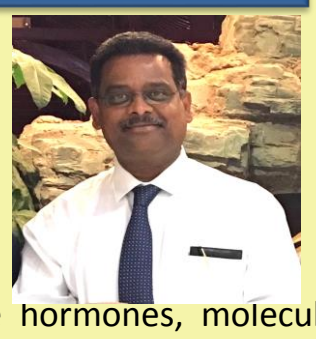
Web page : http://sls.uohyd.ac.in/

Course Coordinator

Dr. Suresh Yenugu
Department of Animal Biology, School of Life sciences,
University of Hyderabad, Hyderabad, INDIA.

Please send your detailed resume along with statement of purpose to : sureshsl@uohyd.ernet.in on or before June 20 2018.

Teaching Faculty



Prof. T. Rajendra Kumar
Dr. T. Rajendra Kumar is an Edgar L. & Patricia M. Makowski Endowed Professor and Vice-Chair of Research in the Department of Obstetrics and Gynecology, University of Colorado Anschutz Medical Campus, USA.
His areas of research focus include reproductive hormones, molecular genetics and reproductive disorders. In particular, he studies the early diagnosis and prevention of pituitary tumors, microenvironmental integrity within gonads and quality of gametes, and gonadotropin signaling in ovaries.
Dr. Kumar received his Master of Science degree in Biochemistry and his Master of Philosophy in Reproductive Physiology at the Central University of Hyderabad, India. He also earned a Ph.D. in Endocrine Biochemistry at the University of Delhi, India.
Dr. Kumar has published more than 100 papers including textbook chapters and invited reviews. Though he is a professor and basic research scientist, not a physician, Kumar hopes that the studies from his laboratory will lead to benefits for patients.

Dr. Subeer S. Majumdar
Dr. Subeer Majumdar's research group works in the field of animal biotechnology, genomics and animal reproduction. His present research focus on (1) Production of therapeutic proteins for animal and human in milk of farmed animals; (2) attempts to generate bulls with X chromosome bearing sperm only to increase production of female offspring; (3) New Methods of transgenesis for biomedical research and to facilitate production of transgenic cattle, goat and buffalo. To increase quality of herd: disease resistant and more milk yielding animals; (4) Livestock genomics; (5) Alternative to knock out technology, utilizing shRNA to generate transgenic animals.

Prof. B. Seshagiri Polani
Prof. Seshagiri Polani research is on studying early mammalian development with regard to the acquisition of fertilizing potential of spermatozoa and development of embryos through peri- implantation stages with particular reference to the phenomenon of blastocyst hatching. Besides, we are interested in studying cell lineage specification by using ES-cells as model system. These studies contribute to our knowledge on the basic biology of early mammalian development, cellular differentiation and have implications in animal embryo biotechnology and in the management of human infertility and health.

Guest Speakers

Dr. Prasad, Anu Fertility Clinic, Hyderabad.
Dr. Pramod Sutrave, Aprus Biomedical Innovations, Bangalore.
Dr. Chandra Sekhar, CCMB, Hyderabad.

Registration Fees

Participants from abroad	: US $500
Scientists	: Rs. 5,000/-
Students	: Rs.2,000/-
Industry	: Rs.20,000/-
Academic Institutions	: Rs. 5,000/-

The above fee includes all instructional materials, computer use for tutorials, 24 hr free internet facility . The participants will be provided with single bedded accommodation on payment basis.