

Patron : Dr. R. K. Singh, Director, I.V.R.I.

Director, CAFT : Dr. G. Taru Sharma

Course Director : Dr. Sadhan Bag

Course Conveners : Dr. Gyanendra Singh
Dr. Puneet Kumar
Dr. Mihir Sarkar

Faculty

Faculty of CAFT in Veterinary Physiology
Faculty of IVRI from allied disciplines
Guest faculty of distinguished Indian experts



Contact for further correspondence:

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APPLICATION FORMAT

Nanobiology and Regenerative Therapies in Animal Health and Production

September 1— September 21, 2015

Full Name (Block letters):

Date of birth:

Designation:

Present employer with address:

**Address for correspondence with Telephone/ Mobile number,
Fax number and Email:**

Academic qualifications starting from graduate level:

Name of Degree	University	Year of Passing	Major Subject Offered

Signature of candidate

Certificate from employer:

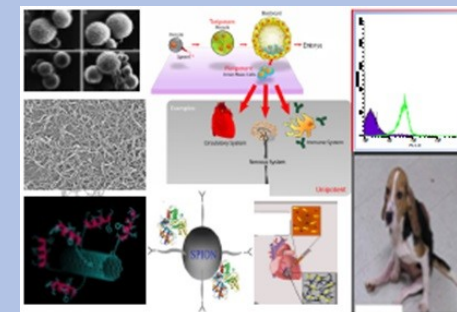
The application of Dr./Mr/Ms....is hereby recommended for attending the course entitled "**Nanobiology and regenerative therapies in animal health and production**" being organized by CAFT in Veterinary Physiology, Division of Physiology & Climatology, IVRI, Izatnagar from **01.09.2015 to 21.09.2015**. It is further certified that the information furnished by him/her has been verified and found correct.

Signature of recommending/ sponsoring authority
with seal

**A Short course
on**

**Nanobiology and Regenerative
Therapies in Animal Health
and Production**

September 1 to September 21, 2015



**CAFT in Veterinary Physiology
Division of Physiology and Climatology
ICAR-INDIAN VETERINARY RESEARCH INSTITUTE
IZATNAGAR- 243 122 (U.P.) INDIA**



A CAFT short course on Nanobiology and Regenerative Therapies in Animal Health and Production

INTRODUCTION

Regenerative medicine is an area in which stem cells hold great promise for overcoming the challenge of limited cell sources for tissue repair. Stem cell research is being pursued extensively in laboratories all over the world with the hope of achieving major medical breakthroughs. Scientists are striving to create therapies that rebuild or replace damaged cells with tissues grown from stem cells and offer hope to people suffering from cancer, diabetes, cardiovascular disease, spinal-cord injuries, and many other degenerative disorders. In animal, stem cells have immense potentiality particularly in companion animal as well as racing horse for treating neuromuscular disorder, repair of cartilage, bone defects, healing of wound etc. However, there have been difficulties in maintenance and propagation of undifferentiated stem cells (embryonic and adult) in in-vitro culture condition primarily because of failure of providing suitable and nonvariable extracellular matrix (ECM). Further, current experiments with stem cells fail provide information about the behavior of the transplanted cells in the host organism, especially about their presence within the target structures and their potential neoplastic growth. The lack of these data is a serious obstacle for the therapeutic use of cell therapy. The intersection of nanotechnologies with stem cell research in recent years has enthralled the scientific community to explore the new avenues like stem cell microenvironment & tissue engineering, stem cell tracking & imaging, stem cell transfection, isolation & sorting etc.

SHORT COURSE

A training course of 21 days duration is being proposed on Nanobiology and regenerative therapies in animal health and production. The participants may be selected from the disciplines of Animal Physiology, Biochemistry, Biotechnology, Pharmacology & Toxicology, Medicines, Surgery, Pathology, Gynaecology and Obstetrics, LPM and allied disciplines in Veterinary Sciences etc working not below the rank of Assistant professor and equivalent under SAUs, ICAR institutes of National Agricultural Research System (NARS).

CAFT in Veterinary Physiology

Division of Physiology, Pharmacology & Biochemistry was formally established in 1970. Later on Division of Pharmacology & Toxicology as well as Biochemistry was separated and the existing Division was renamed as Division of Physiology and Climatology. On the basis of achievements in Animal Physiology research and teaching, ICAR granted the status of Centre of Advanced Studies in Veterinary Physiology to this division in 1995. The centre is having the responsibility of teaching and research with a mandate of training scientists and teachers of Universities and Research Institutes. The Centre of Advanced Studies (CAS) was renamed as Centre of Advanced Faculty Training (CAFT) by the ICAR in the year 2010.



INSTITUTE

Indian Veterinary Research Institute (IVRI) a premier National Institute of Indian Council of Agricultural Research, The Institute was established in the year 1889 and has rendered services as National Institute for more than 125 years to the country. In 1983, IVRI was accorded the status of Deemed to be University by UGC for the award of M.V.Sc. and Ph.D. degree.

COURSE CONTENT

The present course will deliberate the recent advancement of stem cells spanning from embryonic to adult stem cells, cutting edge technologies like induced pluripotent stem cells and their potential application, in vivo cellular reprogramming, stem cell based cloning, transgenic animal production. Application of nanotechnology in proliferation, targeted differentiation and transplantation of stem cells, growth factors delivery including toxicity of nonmaterial on stem cells as well as its other application in physiology research. The course will also emphasize hands on training in isolation, phenotyping, differentiation and cryofreezing of stem cells from different sources, preparation of transgenic stem cells, as well as in vivo stem cell transplantation for spinal regeneration, bone regeneration, wound healing, cartilage regeneration etc including application of modern techniques for tracking of transplanted cells in vivo. Further, preparation of growth factor loaded nanoparticle and their characterization, culture, targeted differentiation of stem cells using designer nanomaterials and evaluation of toxicity on stem cells will also be demonstrated. Apart from this, different upstream physiological techniques also will be discussed during the training period.

SEMINAR

Participants are expected to deliver a short seminar highlighting their activities in the parent organization.

CERTIFICATE

A certificate will be awarded to the participants on the successful completion of the course.

FINANCIAL ASSISTANCE

No course fee will be charged for joining the course. The participants will be paid TA as per entitled class restricted to 2nd AC sleeper and DA for the journey period, provided they produce a certificate from the parent organization to the effect that they are not being paid TA and DA for this course. The participants will have to produce documentary evidence of travelling in the entitled class.

BOARDING AND LODGING

Local hospitality including free boarding and lodging will be arranged in the institute guest house. Local participants will be provided with minimum hospitality of lunch, tea, coffee etc. Participants are advised not to bring spouse and children as we are having limited accommodation.

APPLICATIONS

Candidates may log on to www.iasri.res.in/cbp, apply online and send duly forwarded application by post to Director CAFT (gts553@gmail.com) / Course Director (bag658@gmail.com) on or before August 25, 2015. **Selection will be made on first come first serve basis.**