DESIGN INNOVATION CENTRE
Spoke Partner

Nanobiotechnology based therapy & Bio- Entrepreneurship

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Vision

The use of Nanotechnology approach to develop a new process, product, trained manpower which will help to develop new therapy which can easily manufactured in industry by using the same technology. These developed therapeutics nanoparticles based product have a better cure for diseases by reducing drug concentration and side effect and increasing efficacy. In vision also included to creating such facility which will help to develop a Bio-entrepreneur along with technology development, whose ultimate goal to promotes innovator to bring their own developed technology based on nanoparticles and microparticles manufacturing in to the market to manufacture drug, therapeutics protein, siRNA and DNA loaded microparticles, nanoparticles at industrial scale. Proposed facility will offer improvisation in existing tools for research and innovative inventions, thereafter working for their start-ups and nurture them to become commercially viable companies with a vision towards the development of better therapy for the mankind.

Mission

The Proposed facility is intended primarily for students who have interest to peruse science as career. This facility will also help them to convert their dream into reality which will lead to development of a new technology, process and invention of a new therapy based on nanotechnology. Furthermore this facility will also provide them a platform to be entrepreneurs with dreaming to imaginatively change the world by challenging the status quo, and in the process creating industry-defining products and also will help to trained a man power specifically required directly to employ in nanotechnology based industry working on new therapy and process developments.

Working Area of PI

At present am working under different area of projects funded by DST, UGC and DST Nanomission, in the centre of Biotechnology, University of Allahabad as mentioned below:

- **Targeted delivery of different size microparticles delivery system for the treatments of pulmonary tuberculosis, lungs inflammation.**
- **Targeted delivery of siRNA loaded surface modified PLGA nanoparticles for lung cancer treatments.**
- **Targeted delivery of shRNA loaded microparticles for the treatments of lung inflammation.**
- **Insulin loaded Chitosan nanoparticles development for the treatments of diabetes.**
- **Stability of therapeutics protein stability in solution after nebulization for targeted delivery to the lungs by nebulization.**

Objectives

- To provide awareness in the society through seminars, short time training, workshops and conferences.
- To provide a place where students bring their innovative idea from the classroom to lab and pursue with great enthusiasm.
- Developing communication and leadership skills in the students.
- To facilitate partnerships and interdisciplinary collaborations with industry as well as academic institutes and research laboratories worldwide working on the same problem with diverse field expertise.
- To provide a platform for interaction of academia-industry to work together on interest of both university and industry focused project.
- To offer best-in-class research facility to the investigators and students from the University as well as researchers from the other institutes.

Facilities provided/to be made available at the Centre of Biotechnology

➢ Balance	➢ -20 Fridge
➢ Magnetic Sterrier	➢ 4 Fridge
➢ pH Meter	➢ Laminar Flow
➢ Probe Sonicator	➢ CO2 Incubator
➢ Homogenizer	➢ ELISA Plate Reader
➢ PAGE Electrophoresis Unit	➢ Mili Q System
➢ Horizontal Electrophoresis Unit	➢ Gel Doc
➢ Phase Contrast Microscope	➢ Pipette
➢ Fluorescence Microscope	➢ Lyophilizer
➢ Vortex	➢ Trans illuminator
➢ Mini centrifuge	
➢ Cooling High Speed Centrifuge	

Deliverables

Particular	Details	1st year	2nd year	3rd year
New Ideas/process	Various ideas i.e new method for therapeutics protein, drug, siRNA loaded nanoparticles and microparticles preparation, process standardization, scale up process development and optimizing. Viable and potential ideas will be scaled up of interest of industry.	**1-2**	**2-3**	**3-4**
Patents/IPR	Potential ideas will be screened and attempted for registering the intellectual property and patenting.	**1-2**	**1-2**	**2-3**
Prototype	Promising new models and technology development for nanoparticles synthesis at industrial scale in conjunction with the industry collaborators will be tested. Many of them will be standardized and optimized for industrial use	**1**	**1-2**	**1-2**

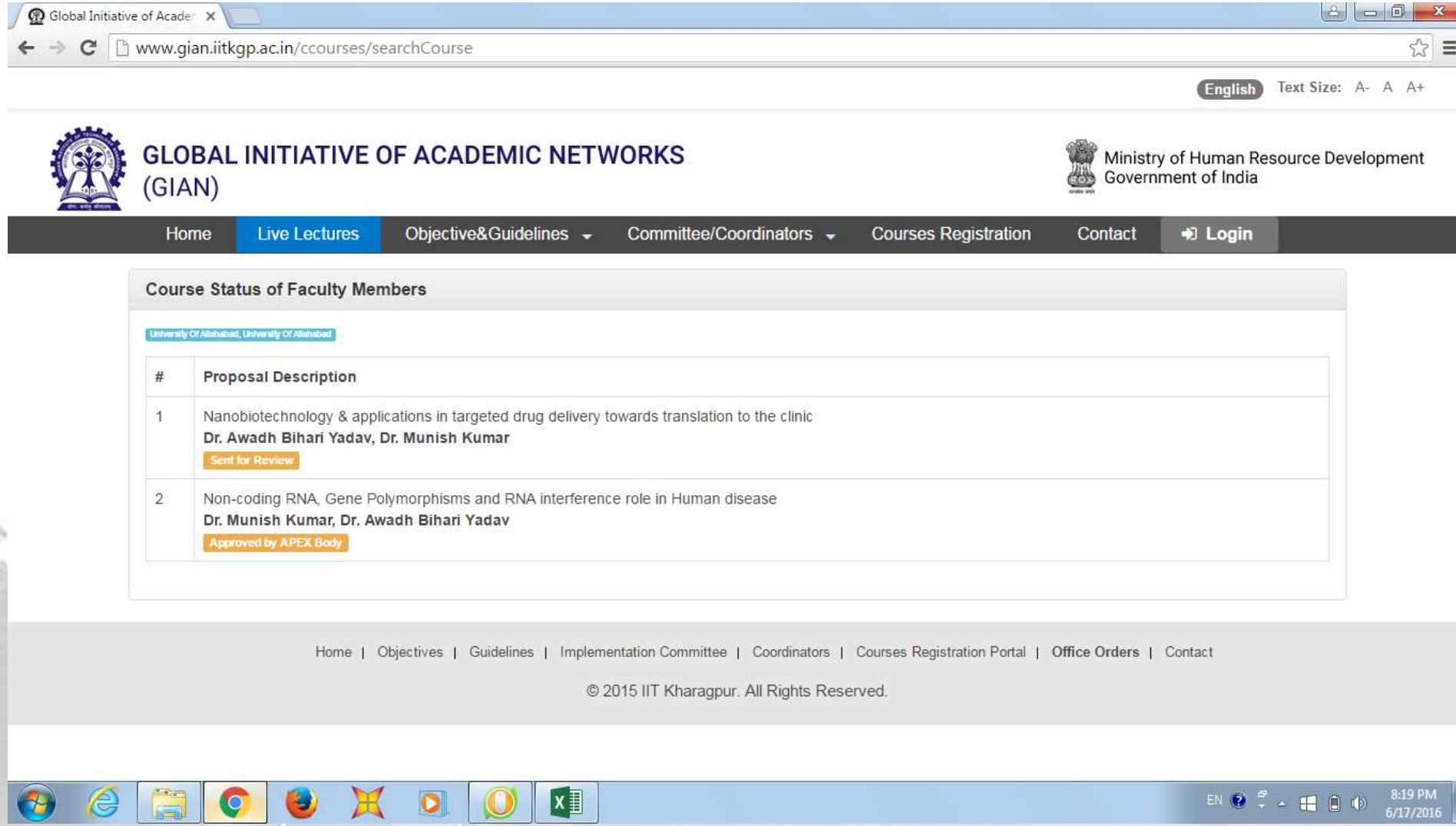
Patents and Innovation of Allahabad University

Few Patents granted to the Allahabad university as following:

- **United States Patent** : 6,312,698 Granted on : 06 Nov. 2001
- **Japanese Patent** : 3304329 Granted on : 10 May 2002
- **Great Britain Patent** : 2360705 A Granted on : 24 Nov. 2004
- **Indian Patent** : 226628 Granted on : 22 Dec. 2008

Few Promising Design, product and process under different developmental stages in Centre of Biotechnology and Rural Technology and Development Centre of Allahabad University as following:

- Development of Modified medium for the growth of *Malassezia* spp. the causal organism of Pityriasis Versicolor and dandruff under the heading " ***Modified culture medium and process thereof".***
- A new broad-spectrum liquid medium for antimicrobial assays ***A culture medium for the growth of Malassezia* spp.*"* (App. No. 546/DEL/2012, Patent Filed in 2012).**
- Development of method and assay for study of stability as well as functional efficacy of therapeutics molecules after nebulization process. **Developmental stage**
- Also developing a method to screen antioxidant, antibacterial and anticancerous property of a drugs in cell culture in in-vitro condition. **Developmental stage**
- Inhalable insulin nanoparticles for the treatments of Diabetes **"I needle free cure for diabetes**". **Developmental stage**
- Ciprofloxicin loaded chitosan nanoparticles for Mestitis treatments in animal: **Developmental stage**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Proposal Description
1 Nanobiotechnology & applications in targeted drug delivery towards translation to the clinic
Dr. Awadh Bihari Yadav, Dr. Munish Kumar
Sent for Review
2 Non-coding RNA, Gene Polymorphisms and RNA interference role in Human disease
Dr. Munish Kumar, Dr. Awadh Bihari Yadav
Approved by APEX Body
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