



UNIVERSITY OF MYSORE

YUVARAJA'S COLLEGE (AUTONOMOUS)



(A constituent Autonomous College of the University of Mysore)

Re-Accredited A Grade by NAAC with CGPA of 3.34 and College with Potential for  
Excellence

Mysore-570 005

Best practices of 2019-20

## Best Practices: 1

### 1. Title of the Practice

Lecture series on Nobel Prizes on Physics, Chemistry and Biology

### 2. Objectives of the Practice

The objective of this practice is to -

- To enable the students to have in-depth understanding on the path breaking discoveries
- To promote inquisitiveness towards Knowledge in students
- Create research mentality in students

### 3. Context

It is very much necessary for all educational institutions to promote research mentality in students and quest for scientific innovations. Routine theory and practical classes are not sufficient in inculcating such mindset in our younger generation. The progress of every Country is dependent on the innovativeness and quality of scientific research undertaken. If this has to happen, a suitable background for this has to be given in educational institutions like our College. Since our College is already having research environment and collaborations with other institutions, invited lectures arranged are well received by students. As all of us know best of the scientific discoveries/inventions are selected for Nobel Prize every year in the field of Physics, Chemistry and Biology. One of the Senior and concerned citizens of Mysuru city Mr. Durai Krishnan who is a Retired Scientist from Bhaba Atomic Research Centre, Mumbai suggested our College authorities to arrange a lecture series every year after the announcement of the Nobel Prizes. This suggestion is well received and the Science Forum of the College is

entrusted with the responsibility of arranging this program every year since 2019-20 academic year.

#### **4. The Practice**

**Listing the Nobel Prize awardees:** Every year in the month of October, Nobel Prizes are announced by Royal Swedish Academy of Sciences on six categories viz., Physics, Chemistry, Biology, Literature, Economics and Peace. We have decided to have on three categories as our College is mainly a Science College. During October 2019

i). The Nobel Prize in physiology or medicine was awarded on oct 7<sup>th</sup> to William Kaelin Jr, Peter Ratcliffe and Gregg Semenza “for their discoveries of how cells sense and adapt to oxygen availability.”

ii). The Nobel Prize in physics was awarded on Oct 8, with one half to James Peebles “for theoretical discoveries in physical cosmology” and the other half jointly to Michel Mayor and Didier Queloz “for the discovery of an exoplanet orbiting a solar-type star.”

iii). The Nobel Prize in chemistry was awarded on Oct 9, to John B. Goodenough, M. Stanley Whittingham and Akira Yoshino “for the development of lithium-ion batteries.”

#### **Request with Scientists to deliver the lectures:**

As the next step, we start searching for the scientists who are willing to deliver lectures in these areas. Accordingly, we short listed scientists and started corresponding with them and we could get consent from three scientists who whole heartedly agreed to come to Yuvaraja’s College and deliver the Noble Prize Lectures.

#### **Arrangement of Lectures**

Lecture series is arranged in the Platinum Jubilee Auditorium of our College. Dr. Purusharth Rajyaguru of Indian Institute of Science delivered Lecture on the Nobel Prize in Physiology and Medicine on “How cells sense oxygen”. Prof Rajyaram Nityanada of Azim Premji University delivered Lecture on the Nobel Prize in Physics. Dr. Premkumar from Central Energy Research Institue , Karaikudi delivered lecture on the Nobel Prize in Chemistry on Lithium ion batteries.



UNIVERSITY OF MYSORE  
**YUVARAJA'S COLLEGE**

(Constituent Autonomous College with Potential for Excellence)  
Accredited 'A' grade with CGPA 3.34 by NAAC  
JLB Road, Mysuru - 570 005, Karnataka, India



Science forum invites you all for  
**Nobel Prize - 2019 Lectures on  
Physics, Chemistry and Physiology & Medicine**

\*\*\*\*\*



Introduction to the Program by  
**Prof. M Rudraiah**  
Principal, Yuvaraja's College

Invited Lectures by  
**Dr. Premkumar** CERI, Trivandrum  
Topic: Lithium Ion Batteries

**Dr. Purusharth Rajyaguru** IISc., Bengaluru  
Topic: How Cells Sense Oxygen

&

**Prof. Rajaram Nityananda** Azim Premji University, Bengaluru  
Topic: Cosmology and Exoplanets

All are Welcome

\*\*\*\*\*

Date: 31.10.2019 Thursday

Time: 1.00 PM to 5.00 PM

Venue: Platinum Jubilee Auditorium, Applied Science Block,  
Yuvaraja's College, Mysuru - 05

\*\*\*\*\*

**Prof. M. Rudraiah**  
Principal

**Dr. H. C. Devaraje Gowda**  
Administrative officer

**Dr. H. B. Mahesha**  
Controller of Examination

Members of Science Forum and Faculty

## 5. Evidence of Success

This lecture series was a huge success with good attendance from students of Undergraduate, postgraduate departments of our College, P. G. Department of University of Mysore other autonomous Colleges Regional Institute of Education located in Mysore City. Very good questions were asked by students as well as by public.

## 6. Problems Encountered and Resources Required

Grants available to conduct was not sufficient to meet all the requirement to arrange this. Hence better funding enables the organisers to conduct with lesser burden

## Best Practices: 2

**1. Title of the Practice:** Reducing carbon dioxide content in atmosphere using cyanobacteria and algae

### 2. Objectives of the Practice

Climate change is a global phenomenon that largely impacts human life. Green house gases like carbon dioxide causes sea levels to rise, increases the number of extreme weather events such as floods, droughts and storms, and increases the spread of tropical diseases. Estimates suggest that cities are responsible for 75 percent of global CO<sub>2</sub> emissions, with transport and buildings being among the largest contributors.

Therefore the following best practice is initiated in the College:

- To culture cyanobacteria and algae in the laboratory
- To supply the same to city corporation to use in circle with water facility
- To maintain the culture in laboratory for continuous supply
- To nominate a group of students to monitor the culture in lab

### 3. The Context

Algae and cyanobacteria are 400 times more efficient than a tree at removing CO<sub>2</sub> from the atmosphere. A specific strain of algae called *chlorella vulgaris*, which soak up much more CO<sub>2</sub> than any other tree/plant. Unlike tree which require lot of maintenance like tree guard, regular trimming and watering, the algae and cyanobacteria are maintenance free once applied to the water they will do the rest.

### 4. Innovation and Best Practice of the College

**In our College we are maintaining Open ponds:** Open ponds are the oldest and simplest systems for mass cultivation of microalgae. In this system, the shallow pond is usually about 01 foot deep; algae are cultured under conditions identical to their natural

environment., in which a paddlewheel provides circulation and mixing of the algal cells and nutrients (optional). The Open ponds are typically made from concrete, or they are simply dug into the earth and lined with plastic to prevent the ground from soaking up the liquid.

Although open ponds cost less to build and operate than enclosed photobioreactors, this culture system has its intrinsic disadvantages. Since these are open-air systems, they often experience a lot of water loss due to evaporation. Thus, best results can be obtained if the place of pond have maximum shade, but this is not obligatory.

Algae can be used for reducing the emissions of CO<sub>2</sub> from power plants. Coal is, by far, the largest fossil energy resource available in the world. About one-fourth of the world's coal reserves reside in the United States. Consumption of coal will continue to grow over the coming decades, in the world. Through photosynthetic metabolism, microalgae absorb CO<sub>2</sub> and release oxygen. If an algal farm is built close to a power plant, CO<sub>2</sub> produced by the power plant could be utilized as a carbon source for algal growth, more importantly we can supply culture for City Corporation, for use in traffic congested circles in the city roads/highways to reduce the level of CO<sub>2</sub>.

### **5. Evidence of Success**

The College is situated in the heart of the city with abundant number of vehicles/traffic despite this situation the College campus is having pure oxygen level with reduction in CO<sub>2</sub>.

### **6. Problems Encountered and Resources Required Please identify the problems encountered and resources required to implement the practice (in about 150 words).**

The pond construction required civil construction and associated financial sanction which was taken care by the College and construction was done.