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As per decision of Council meeting held on May 03, 2014, Presidential Address will not be printed henceforth in Everyman’s Science as they are already printed in the above mentioned book.
Soil-transmitted helminth infections commonly known as STH infections are amongst the most common infections worldwide and affect the poorest and the most deprived communities. It has become the most common parasitic disease of humans. According to a latest estimate, approximately two billion people are infected by it and another four billion are at risk. The largest number of STH infection occurs in the impoverished rural areas of Sub-Saharan Africa, Latin America, Southeast Asia, and China. It is mainly caused due to lack of proper sanitation, such as the practice of open defecation and lack of hygiene such as hand washing. It is regarded as one of the world's most important causes of intellectual and physical retardation. India has a prevalence of about 10-15 % STH infection amongst school going children. This infection rate varies from different parts and communities of the country.

STH is caused specifically by those helminths which are transmitted through soil contaminated with faecal matter and are hence called soil-transmitted helminths. Three types of soil-transmitted helminthiasis can be distinguished: ascariasis, hookworm disease and trichuriasis. These three types of infection are caused by: the large roundworm, Ascaris lumbricoides; the hookworms Necator americanus or Ancylostoma duodenale; and by Trichuris trichiura which is also called a whipworm. Soil-transmitted helminths live in the intestine and their eggs are passed in the faeces of infected persons and deposited on soil. Ascaris and hookworm eggs become infective as they mature in soil. People are infected with Ascaris and whipworm when eggs are ingested. This can happen when hands or fingers that have contaminated dirt on them are put in the mouth or by consuming vegetables and fruits that have not been carefully cooked, washed or peeled. Hookworm eggs are not infective. They hatch in soil, releasing larvae that mature into a form that can penetrate the skin of humans. Hookworm infection is transmitted primarily by walking barefoot on contaminated soil. One kind of hookworm (Ancylostoma duodenale) can also be transmitted through the ingestion of larvae.

As mentioned above, ascariasis is caused by the large roundworm A. lumbricoides. It is the most widespread STH infection and affects approximately 1 billion people worldwide. It is mostly present in the tropical and subtropical areas. The infections are mild and often show little or no symptoms. Heavy infections, however, are debilitating, causing severe intestinal blockage and impair growth in children. Severe ascariasis is typically a pneumonia, as the larvae invades lungs, producing fever, cough and dyspnoea during early stage of infection. Children who are malnourished are infected the most. The most common age group is 3 to 8 year, with an annual death of about 20,000. Children are more susceptible due to their frequent exposure to contaminated environment such as during contaminated water, eating raw vegetables and fruits, and often putting unwashed hands inside their mouths.

Hookworm infection is caused either by N. americanus or A. duodenale. Mild infections causes diarrhoea and abdominal pain. More severe infections create serious health problems, especially for newborns, children, pregnant women, and malnourished adults. In fact it is the leading cause of anaemia and protein deficiency in developing nations, affecting about 740 million people. N. americanus is the more common hookworm, while A. duodenale is more geographically restricted. Unlike ascariasis and trichuriasis, high-intensity hookworm infections are more frequent in adults than in children, specifically women. Roughly, 44 million pregnant women are estimated to be infected.
The disease causes severe adverse effects in both the mother and infant, such as low birth weight, impaired milk production, and increased risk of mortality.

*Trichuristrichiura* is the third most common STH-causing nematode. According to a current estimate, nearly 800 million people are infected by this helminth and majority of the victims are children. Heavy infections could lead to acute symptoms such as diarrhoea and anaemia, and chronic symptoms such as growth retardation and impaired cognitive development are also common in this infection. Medical conditions are more often serious since co-infection with protozoan parasites such as *Giardia* and *Entamoebahistolytica*, and with other nematodes is common.

STH is often associated with malnutrition in children as it worsens the nutritional status of the people they infect in multiple ways. The worms can induce intestinal bleeding, competition for nutrients (malabsorption of nutrients) frequent anaemia and diarrhoea. Soil-transmitted helminths can also cause loss of appetite. These nutritional "knock on" effects of STH can have a significant impact on growth and physical development of children. In endemic countries, communities remain suppressed due to malnourishment, cognitive disability and physical weaknesses as a result of heavy infections.

The best way for the detection of STH infection is the microscopic analysis of eggs in the stool samples. This can be done by the use of a novel and effective method known as the Kato Katz method. It is a highly accurate and rapid method for detecting STH eggs in the stool samples of the patients.

STH can be prevented or controlled by the following methods:

1. Availability of clean water for personal and domestic uses.
2. Improved access to sanitation which includes the use of properly functioning and clean toilets by all community members.
3. Education on personal hygiene such as hand washing and hygienic and safe food preparation.
4. Eliminating the use of untreated human faeces as fertilizer.

One effective strategy to control the disease in areas where it is common is the treatment of entire groups of people regardless of symptoms by mass drug administration. This is often done amongst school-age children and is known as deworming. In India, this sort of programme has become common nowadays, and many states have participated in such deworming programmes either through private or government help. It is evident that routine deworming in the absence of positive test results improve nutrition, haemoglobin, school attendance and school performance.

Mass drug administration involves the use of broad-spectrum benzimidazoles such as mebendazole and albendazole which are the drugs of choice recommended by WHO. These anti-helminthics administered in a single dose are safe, relatively inexpensive, and effective for several months. Mebendazole can be given with a single dose twice a day for three consecutive days. Albendazole is given at a single dose. WHO recommends annual treatment in areas where between 20 and 50% of people are infected, and a twice a year treatment if it is over 50%; and in low risk situation (i.e. less than 20% prevalence) case-by-case treatment. In addition to these, pyrantelpamoate is also equally effective on ascaris. However, it has been reported that albendazole, mebendazole, and pyrantelpamoate are not entirely effective against with single oral doses in population-based control.

It is estimated by the World Health Organisation that globally more than 1.5 billion people (24% of the total population) are infected by a soil-transmitted helminth. Over 270 million preschool-age children and over 600 million school-age children live in areas where these parasites are intensively transmitted, and are in need of treatment and preventive interventions. More than 880 million children are in need of treatment from STH infections. The situation is really alarming as the
latest estimates indicate that the total annual death which is directly caused by STH infection alone is as high as 135,000. If malnourishment is added to STH infection then the number will be much higher.

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Dr. Manoj Kumar Chakrabarti
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Intelligence is the ability to adapt to change.
—— Stephen Hawking
Non communicable diseases (NCDs) are showing an upward increasing trend in most countries, and for several reasons this trend is likely to increase. United Nations summit in September 2011 focused mainly on four NCDs, namely cardio vascular diseases, cancers, chronic respiratory diseases and diabetes. Developing countries are now warned to take appropriate steps to avoid the “epidemics” of non communicable diseases likely to come with socio economic and health developments and adoption of new lifestyles. Lifestyle is not starting spontaneously in the middle age of a person but is primarily a cumulative product of his/her physical capacity co-ordinated with psychological functioning as habits, behavior, dietary and living pattern based on own training from childhood, and mimicries gained from immediate companions including parents, siblings, peers, etc. Traditional Medicine (TM) always blends with the culture and lifestyle of a given area. Ayurveda, a traditional medical system of India, has a blend of Indian culture inherently. Its objective is to accomplish physical, mental, social and spiritual well-being by adopting preventive and promotive approaches to disease with a holistic approach. The preventive packages are a lifetime approach through childhood and preconceptional interventions including segments like maternal and paternal health, preconception care, gestational management, childhood care, adolescent awareness programmes, better selection of food and healthy feeding practice (FHFP), appropriate sleeping practice and a well maintained sexual discipline adaptable to the culture of a given country.

INTRODUCTION

Non Communicable Diseases (NCDs) threaten health, development and the achievement of WHO goals of “health for all” by 2020. NCDs currently represent 63% of global deaths (36 million deaths), and 80% of these are in low and middle income countries. United Nations summit held on 19th and 20th September, 2011 focused mainly on four NCDs that include cardio vascular diseases, cancers, chronic respiratory diseases and diabetes. NCDs are otherwise termed as lifestyle diseases. Lifestyle is not starting spontaneously in the middle age of a human being, but the total output of one’s style of living beginning from his birth. Thus lifestyle of a person is a cumulative product of his/her physical capacity co-ordinated with psychological functioning, as habits, behavior, dietary and living pattern based on his own training since childhood, and mimicries gained from his immediate companions, including parents, siblings, peers, etc. Worldwide, about 80,000 to 100,000 children start smoking each day, many under the age of 10 years; which contribute to significant mortality and morbidity. Such issues demands not only increasing awareness among general population but sometimes necessitates government legislations like raising cigarette taxes effectively which has been
shown to reduce youth smoking prevalence. Every 10% increase in price reduces the number of child smokers by 6-7%. So NCDs are a pediatric issue which establishes its foundations in the “key stages” of life and later manifest as diseases of adult population.

TRADITIONAL MEDICINE AND NCDs

Traditional Medicine (TM) is the sum total of knowledge, skills, and practices, based on the theories, beliefs, and experiences of diverse indigenous cultures, whether explicable or not. TM is used in the maintenance of health along with the prevention, diagnosis, improvement or treatment of physical and mental illness. World Health Organization (WHO) at Alma Ata in 1978 first realized the role of traditional, alternative and complementary systems of medicine in healthcare sectors of both developing and the developed nations, with the slogan “Health for All”. Later, this issue has been globally addressed by the Traditional Medicine Program of WHO on several perspectives, ranging from cultivation of herbs, to manufacturing, dispensing, and preparation of guidelines for common masses. TM always blends with the culture and lifestyle of a given area, while the lifestyle of a given area is meant for the maximum comfort to that population because of its adaptability. A lifestyle disease originates when people failed to cope up with the rapid space of urbanization and industrialization. So these are also a part of cultural pollution, and deviation from ones culture or any change in cultural habits that creates a stress to the person. The usual change, that may cause NCDs are the unhealthy diet, physical inactivity, tobacco and alcohol abuse and inability to adapt the changed lifestyle. Traditional medicines usually make its maximum efforts to bring a harmony in food culture and ethics in a population. In developing countries like India broad use of TM is attributable to its accessibility and affordability.

AYURVEDA AND NCDs

Ayurveda is a traditional medical system of India with a blend of Indian culture, inherently to accomplish physical, mental, social and spiritual well-being by preventive and promotive approaches along with the holistic treatment of diseases. Ayurveda primarily focus on prevention of NCDs in children. The “NCD preventive protocol of ayurveda” is a lifetime approach from childhood and preconceptional interventions. This includes maternal and paternal health, preconception care, gestational management, childhood care and adolescent awareness programmes. These approaches are the prime core of this review and will be dealt separately.

1. Best selection of food and healthy feeding practice [FHFP]: According to current concept the quality of FHFP is judged by its nutritional values and proportions in a given recipe. FHFP theory believe that, junk foods are more dangerous in causation of NCDs. However in Ayurveda, an ideal food must adapts with the soul of an individual. This adaptation basically depends on culturally acceptable selection of food based on the place of living and season, type of food that are able to become animate body part (otherwise the food will turn to foreign body), avoiding incompatible combinations of varieties of food items, avoidance of incompatible methods of preparation, required quantity of intake as per the digestive power, at prescribed intervals according to arousal of biological rhythms and post feeding health practices like walking, intake of carminative food substances like aniseeds etc. Ayurveda advocates these rules and regulations of FHFP to reshape the food system for public health. Moreover, unhealthy FHFP may cause genomic changes according to the principles of epigenetics so as to prevent NCDs like obesity.

1. Good sleeping practice- Sleep is remarkably consistent in its organization. Each night is comprised of recurring, complex, active physiologic processes, confirming that sleep is not a phase when body is biologically inactive but a phase interspersed between periods of wakefulness. In connection with NCDs dietary guidelines, physical activity guidelines were well recognized. However, significant evidence regarding the duration and timing of sleep as determinants of health remain
largely unrecognized by policy makers, scientists, and the public. According to Ayurveda sleep is one of the major biological activities of human being which decides one’s health and longevity. Healthy practice of sleep is well described in Ayurveda and its influencing factors on health are position of lying, duration of sleep and time of sleep. Time and duration of sleep according to the season, phenotype, diseased condition, time and type of food, place of living, nature of job, extend of exercise and psychological status of an individual are also described.

2. Sexual discipline adaptable to the culture of a given country. The decision to engage in sexual intercourse for the first time is an important transition during adolescence. Early sexual intercourse (before age 16) poses increased health risks to adolescents including increased risk of contracting a sexually transmitted infection or experiencing an unintended pregnancy, thereby at higher risk for negative health consequences. Ayurveda states that sexual discipline is needed for optimal health. According to Ayurveda the main factors in sexual discipline are qualities of partner, time [according to season and day and night] and frequency of sexual contact, surroundings of sexual act, procedure of sexual act and regimes before and after sexual act. As per Ayurveda main attributes of an ideal sexual partner are relationship/consanguinity (by the norms of cultural fitness), age, health status, ethics and morale and phenotype. The rules and regimens for procreative sex (which is aimed at conception) and non procreative sex (casual sexual relation of a couple which is not aiming at conception) are different. However the effect of the sexual discipline in protection of health is non debatable but how far this will be effective to prevent the NCDs are yet to be discussed.

Human body is functionally rhythmic and is one of the fundamental bases of homoeostasis. Management of variations of this rhythm due to circardian alterations is a paramount concern in Ayurveda to maintain the homoeostasis. In addition to the aforesaid packages, Ayurveda gives special emphasis to the remedies to enhance the health through several daily regimens like Dinacharya, the activities to be carried out every day starting from early wake up in the morning until go to bed at night and therapeutic along with the dietetic interventions to fight against the morbidity induced by seasonal changes Ritucharya the activities prescribed according to different seasons. Dinacharya is the management of circardian variations in human body according to sleep awake cycle. All social arrangements and activities of daily living should go hand in hand with natural biological rhythms. Any change in these rhythms should not go beyond body’s inherent limits of adaptability as it will cause vulnerable individuals (like people engaged night jobs) to manifest debilitation and which can be managed by both Ritucharya and Dinacharya. Ayurveda is a highly personalized medicine and is difficult in implementing it for general population because its regimens in that need to adopt depends upon the lifestyle and behaviours of individuals which can be described for particular cohorts sharing similar characteristics and not for each individual unless concerned on therapeutic basis. Ayurveda practices can be used in preventive protocol of NCDs as a population intervention. Certain strategies that could be implemented in a large population are suggested below:

PROPOSED STRATEGIES

Strategies in couples. Most of the biomedical research in the pregnancy and pre pregnant health status are concentrating to the untoward health hazards like still births, miscarriages and congenital anomalies. Obviously all those studies are concentrating to the micro and macro nutrient status of the women. A growing body of literature suggests that maternal habits like smoking and other toxic exposures lack of adequate nutrition to the growing fetus, environmental hazards, genetic abnormalities, and maternal infections contribute to the causation of several long term health impacts in forthcoming child. Ayurveda gives maximum attention in this area to clear the morbid toxicity from body of couples and
to strengthen the physiological systems. So a couple should be recommended to undergo Panchakarmas, the purificatory therapies of ayurveda and an appropriate rejuvenative package of treatments (rasayanas), before conception.  

**A quick intervention strategy in gestation**  
Compelling evidences suggests that exposure to an adverse fetal and/or early postnatal environment may enhance susceptibility to a number of chronic diseases in the future life of offspring. Macrosomia and obesity from maternal diabetes and metabolic memory is one such phenomenon to exemplify. Slow growth of fetus during gestation may be associated with increased allocation of nutrients to adipose tissue during development and may then result in accelerated weight gain during childhood which may contribute to a relatively greater risk of coronary heart disease, hypertension, and type 2 diabetes mellitus. In mammalian development, the mother transduces environmental information such as nutritional status to her embryo or fetus through the placenta. Ayurveda advocates several drugs, procedure based therapies, alterations in food, maintenance of some psychological dispositions and rituals for a protection and promotion of health in upcoming progeny which could be tools for appropriate application of conventional science and technology to understand, decode, expand further developed traditional knowledge for the contemporary use in the public interest. This will warrant development of newer research and development methodology evolved through the relevant interface of traditional knowledge with modern science.

**Strategies in neonates and early childhood**  
The environmental conditions that are experienced in early life can profoundly influence human biology and long-term health. Quality of nutrition during pregnancy and stress are among the best documented examples of such conditions because they influence the adult risk of developing metabolic diseases, such as type 2 diabetes mellitus, and cardiovascular diseases. The relevant information from the early and late childhood management which are unique to ayurveda classical and regional texts are to be adopted. In this context, there is a need to make special emphasis on the following practices of Ayurveda tradition. They are medications for bath of neonates, drugs for fumigations, post bath application of medicines on scalp, intake of some herbo mineral compounds, certain precautionary measures while handling babies and rituals like gem wearing.

**Strategies in late childhood and adolescence**  
Behaviors established during adolescence have life long consequences for NCDs. A focus on adolescents in national programmes is essential for preventing NCDs. The world health assembly endorsed a resolution calling upon member states to address the needs of youth in the context of NCDs. Diet rules prescribed by Ayurveda classics are to be propagated after its scientific validation by clinical surveys. Parental education is very important according to several studies, and a child need to accept and adopt 27% of lifestyle from their parents.

**CONCLUSION**

NCDs are not all of a sudden phenomenon in a day, rather an expression of one’s lifestyle, when mismatches with the demand and supply that begun from his childhood. Mismatch is between one’s present lifestyle and his designed lifestyle. So a life course design is needed to prevent the genesis of NCDs and should be started from preconceptional stage of a human being. Additional and important role should be given for the awareness programmes among different strata of the public pointing towards healthy lifestyles in which useful and practical suggestions from Ayurveda should be incorporated. An integrated approach is inevitably needed to implement the Ayurvedic style of healthy living as a public health programme.

**ACKNOWLEDGEMENTS**

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REFERENCES


APHID industrialization and increase in population around the world have led to the pollution of environment with various toxic and hazardous pollutants that are the major challenges of 21st century. All types of pollution, directly or indirectly affect the human health and natural environment. Hence, the present scenario on the widespread problems of environmental pollution calls immediate attention towards the remediation and detoxification of these toxic and hazardous pollutants in order to have clean, green and safe environment. Therefore, the sincere efforts have been made to search the environment friendly remediation technologies, which are less polluting and cost effective. In this regard, phytoremediation technology has gained much attention in recent years as an effective and low-cost alternative to conventional remediation technologies for the clean-up of environment polluted by a broad range of toxic and hazardous pollutants.

The term ‘phytoremediation’ consists of the Greek prefix “phyto” meant for plant, attached to the Latin root “remedium” meant to correct or remove an evil. Phytoremediation is the man-engineered use of microbes and plants to remove and/or immobilize environmental pollutants present in soil or water. It is an eco-sustainable green alternative for the conventional remediation technologies that often require high capital investments, labour and energy expenditure. It is also an in situ remediation technology that utilizes the inherent potential of plants for the remediation of toxic heavy metals such as Cd, Cr, Ni, Hg and As etc. Heavy metals are often non-biodegradable as compared to organic pollutants, which can be degraded by microbes and hence, cause serious toxic effects in living beings and reduce the growth of soil microbial communities and thereby retarding the bioremediation processes. Therefore, the remediation of heavy metals from contaminated sites by using green plants is a suitable approach.

The natural (geological) and anthropogenic activities are the major sources of heavy metal pollution in the environment. Anthropogenic sources include industrial wastewaters, fossil fuel burning, mining activities, smelting processes, military operations, utilization of agro-chemicals, waste of small-scale industries (including battery production, metal products, metal smelting and cable coating industries) and brick kilns and coal combustion plant. Plants are well equipped with the remarkable metabolic and absorption capabilities as well as transport systems that help them to take up nutrients or pollutants selectively from the growth matrix, soil or water (Fig. 1). The success of phytoremediation process depends on those plants, which can accumulate desired level of heavy metals concentration in their above ground parts (100-1000-fold) without visible symptoms and termed as hyperaccumulator and the phenomenon is termed as hyperaccumulation. The ideal plants for phytoremediation should have the ability to accumulate high metals content, tolerate high salt concentration, having fast growth rate, produce high...
Fig. 1: Different mechanism of phytoremediation
a) Phytoextraction of As from the soil to aerial plant parts (leaves and stems), b) Phytotransformation of Cr (VI) from soil to Cr (III) in the aerial plant parts, c) Phytostabilization of metal pollutants in soil d) Phytovolatilization of Hg from soil.

There are several types of phytoremediation technologies so far recognized. These include:

(a) **Phytoextraction:** It is the use of pollutant-accumulating plants to remove the pollutants like toxic metals from soil via root absorption by concentrating them in above-ground harvestable plant parts. This technique yields a mass of plant and pollutant (typically metals) that must be transported for disposal or recycling.

(b) **Phytodegradation/Transformation:** It is the breakdown or conversion of highly toxic organic or inorganic toxic metal pollutants into less toxic forms via the action of enzymes secreted within the plant tissues.

(c) **Phytostimulation:** It is the plant-assisted bioremediation, wherein the stimulation of microbial degradation takes place by the release of exudates/enzymes into the root zone (rhizosphere). These broken products are either volatilized or incorporated into the microorganisms and soil matrix of the rhizosphere.

(d) **Phytovolatilization:** It refers to the uptake and transpiration of toxic metal pollutants by the plants, comparatively at low concentration. In this method, water soluble pollutants are taken up by the plant roots, which are modified and transported to the leaves, and further volatilized into the atmosphere through the stomata.

(e) **Rhizofiltration:** It is the use of plants, both terrestrial and aquatic, to absorb, concentrate, and precipitate pollutants with low pollutant concentration in their roots. It is used to clean the

### Table 1. Some metal hyperaccumulator plant species.

<table>
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<th>Species</th>
<th>Metal</th>
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<tr>
<td><em>Bidens pilosa</em></td>
<td>Cd</td>
</tr>
<tr>
<td><em>Brassica juncea</em></td>
<td>Ni and Cr</td>
</tr>
<tr>
<td><em>Thlaspi caerulescens</em></td>
<td>Cd, Zn and Pb</td>
</tr>
<tr>
<td><em>Solanum nigrum</em></td>
<td>Cd</td>
</tr>
<tr>
<td><em>Sedum alfredii</em></td>
<td>Cd</td>
</tr>
<tr>
<td><em>H. lusitanica</em></td>
<td>Pb</td>
</tr>
<tr>
<td><em>P. stratiotes</em></td>
<td>Zn, Pb, Ni, Hg, Cu, Cd and Cr</td>
</tr>
<tr>
<td><em>P. calomelanos</em></td>
<td>As</td>
</tr>
<tr>
<td><em>T. villosa</em></td>
<td>Cu</td>
</tr>
<tr>
<td><em>Alyssum lesbiacum</em></td>
<td>Ni</td>
</tr>
<tr>
<td><em>Alyssum sediforme</em></td>
<td>Pb</td>
</tr>
<tr>
<td><em>Alyssum lesbiacum</em></td>
<td>Ni</td>
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<tr>
<td><em>Pistia stratiotes</em></td>
<td>Zn, Pb, Ni, Hg, Cu, Cd and Cr</td>
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<tr>
<td><em>Pityrogramma calomelanos</em></td>
<td>As</td>
</tr>
<tr>
<td><em>Thordisa villosa</em></td>
<td>Cu</td>
</tr>
<tr>
<td><em>Croton bonplandianum</em></td>
<td>Cu</td>
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The selection of plant species for phytoremediation is a prime and very difficult task. However, the use of native plant species for phytoremediation is highly recommended, because they are less competitive under local conditions and possess potentiality to reduce metal concentration up to an acceptable level in the environment. Many plant species, which are reported as hyperaccumulators based on their capacity to tolerate toxic metal concentration, are summarized in Table 1.
polluted surface waters or wastewaters such as industrial discharge, agricultural runoff, or acid mine drainage by adsorption or precipitation of metals onto the roots or absorption by roots or other submerged organs of metal tolerant aquatic plants.

(f) **Phytostabilization**

It is also known as in-place inactivation or phytoimmobilization of pollutants by plant roots, and is primarily used for the remediation of soil, sediment, and sludges. It is used to limit the pollutant mobility, preventing migration into ground water and availability in soil and water and thus, preventing the spread through food chain since pollutants are absorbed and accumulated by roots, adsorbed onto the roots or precipitated in the rhizosphere.

Phytoremediation technology have several advantages such as cheap and aesthetically pleasing (no excavation require) technology, soil stabilization, reduced water leaching and allow transport of inorganics in the soil, generation of a recyclable metal rich plant residue, applicability to a wide range of toxic metals and radionuclides, minimal environmental disturbance as compared to conventional remedial technologies and enhanced regulatory and public acceptance. However, it has several drawbacks, which includes: i) it is restricted to the sites with shallow contamination, ii) a long time is often required (may be several years) for remediation, iii) harvested plant biomass may act as a hazardous waste and require proper disposal, iv) climatic and hydrological conditions may limit the growth of plants utilized for remediation, v) introduction of non-native species may affect the indigenous biodiversity, vi) consumption/utilization of metal polluted plant biomass is a major concern; vii) contaminants may still enter the food chain through animals that eat plant material containing pollutants.

To overcome the possible drawbacks of phytoremediation technology, the genetic engineering may be a suitable approach. The efficiency of plants for phytoremediation of pollutants can be substantially improved by using the genetic engineering technologies. Genetic engineering may help the plants to develop the resistance against abiotic as well as to combat high concentration of toxic metals. Most of the current research is focused on the understanding of genomics behind the ability of some plants to modify or remove the pollutants. Today, all the researches are limited to the laboratory and no full-scale applications of transgenic or genetically modified plants for metal polluted site remediation are known. However, the efforts are underway to develop the genetically modified plants for better remediation of metals polluted sites.

Today, the phytoremediation is still in research where plants are grown in hydroponic condition, which are fed with the heavy metals. These results are very promising, scientists are ready to admit that the solution culture is quite different from soil because in soil, most of the metals occur as insoluble forms, and are less bio-available, making major obstacle. There are several technical impediments, which need to be catch-up. Many new hyperaccumulator plants remain to be discovered, and there is a need to know more about their eco-physiology. The understanding of plant heavy metal uptake process and proper biomass disposal is still to be unveiled. Further research is required to develop the plants (designer plants) with high growth rate, high biomass, improved metal uptake, translocation and tolerance by using the genetic engineering for effective phytoremediation. Testing and controls in field research is still needed in order to fully understand the movement and final fate of pollutants. In each case, particular attention is to be paid to the nature of pollutants, the physiography of the polluted environment, and the mixture of pollutants present.

The better acceptance in remediation industry, it is important that the transgenic plants continue to be tested in the field. However, the regulatory restrictions should also be regularly re-evaluated to make the use of transgenics for making the phytoremediation less cumbersome. Thus, the phytoremediation can be a suitable alternative for the restoration of heavy metal polluted sites.
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In order to resolve this dilemma, Peter Higgs, in 1964, proposed a new concept of mass of fundamental (Leptons, Quarks and mediators) particles. According to him, at the time of Big-Bang, initially all the fundamental particles had zero mass. But with the time, these particles interacted with the hypothetical field (Higgs field) and consequently gained the mass as the mass depends upon the number of interactions made with the Higgs field. Further, according to quantum mechanics, just like other (strong, electromagnetic and weak) fields, Higgs field also has a mediator particle. This mediator particle is recognized as Higgs boson and popularized as God particle. So, Higgs boson is ultimately responsible to allocate the mass to each fundamental particle. This concept of mass and mediator particle is purely theoretical and scientists fully rely on this. However, due to inadequate theoretical knowledge of mass, which is considered to be key parameter of Higgs boson and limited technological advancement, the Higgs boson could not be detected experimentally. With the various theoretical and experimental advancements on time scale, it was expected that the Higgs boson could be hunted at very high energy of the order of TeV (1TeV = 10^{12} eV). Experimentally, to discover the Higgs boson and to conduct other advance studies in the field of high energy physics research, CERN's council in 1991 proposed to set up a Large Hadron Collider (LHC) machine, which would be installed in 27-kilometer circular tunnel, 100 m underground the French-Swiss border near Geneva. The planning and design of the LHC machine was in such a way that first the machine would generate two highly energetic proton beams of 7 TeV each in two different ultra high vacuum pipes, then these proton beams would move in opposite directions and finally collide with each other through head on collisions. This centre of mass energy of 14 TeV and also high luminosity (probability of collision between protons) would recreate the situation just after 10^{12} seconds of Big-Bang. For detection of these proton-proton collisions, two full-size detectors ATLAS (A Toroidal LHC ApparatuS) and CMS (Compact Muon Solenoid) were installed in two specific
positions. The course of action to install and run the LHC machine at desired energy and luminosity was very complicated as well as challenging and involved highly advanced and complex technologies.

The dedicated team of scientists and engineers from CERN and researchers from all around the world accepted this challenge and put their potential to accomplish this goal. As a result of this, in November 2009, LHC accelerated first proton beam with energy 0.45 TeV. With the continuous efforts of the CERN team, two protons beams each having energy 1.18 TeV were circulated separately in two different ultra-high vacuum pipes that achieved centre of mass energy of 2.36 TeV, in December 2009. In March 2010, LHC further increased the speed of proton beams at energy 3.5 TeV each and collided proton-proton beams and acquired centre of mass energy of 7 TeV. Also, in April 2011, LHC achieved high luminosity of 4.67 \times 10^{32} \text{cm}^{-2}\text{sec}^{-1}. This much high luminosity means more chances of proton-proton beam collision and as a result more statistical data. Up to June 2011, ATLAS and CMS detectors collected 1 inverse femtobarn (around 70 x 10^{12} collisions) amount of statistical data. Further, in October 2011, ATLAS and CMS accumulated six inverse femtobarns amount of data separately. In February 2012, the preliminary results based on the data analysis of both the detectors indicated the approximate mass range of the Higgs boson. As per ATLAS and CMS detectors, the expected mass of the particle may lie between 116-131 GeV and 115-127 GeV respectively. These observations from both the detectors gave the clue of 115 – 131 GeV mass range of the Higgs boson, if it really exists. This base acted as a catalyst to energize the scientists to concentrate more on this mass limit and the further analysis indicated the confined mass range from 124-126 GeV at 7 TeV of centre of mass energy. The encouraging previous experience with LHC machine at 7 TeV of centre of mass energy motivated the scientists to go beyond this limit and run the machine at 8 TeV energy. This strategy was formulated in February 2012 and successfully implemented in April 2012 by operating the machine at 4 TeV per proton beam and hence centre of mass energy 8 TeV. This enhanced energy may contribute to discover the new particle more precisely.

In July 2012, the latest experimental analysis with both the detectors confined the mass range of new particle between 125 - 126 GeV. ATLAS observed mass of new particle around 126 GeV at the level of five sigma. At the same sigma level, CMS observed the mass of the particle around 125 GeV. Here, \sigma is the standard deviation, which is a measure of the statistical fluctuations from the mean value and 5 signifies that the reproducibility of the results is 99.99995% if the same experiment is repeated. These results clearly show that new particle has been discovered, which must be a boson.

However, at this time it is difficult to claim that the new discovered particle is actually an awaited Higgs boson. To ascertain this, there is a need to study the properties (like parity, spin etc.) of new particle in detail and compare with the predictions of Standard Model. Certainly more experimental data and hence more time is required to know the hidden mystery about this particle. Definitely, high luminosity and high energy (14 TeV) will contribute more to achieve the goal. So, this is time to observe that how the scientists, engineers and researchers around the globe substantiate the fact that whether the new particle found is really long awaited Higgs boson or a new boson. The whole world is curiously waiting for to get this answer.

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MEDI CAL APPLICATIONS OF FULLERENES

Jyoti D Vora and Padma Srinivasan

Advancement of science and technology in the field of medicine is undoubtedly remarkable in the 21st century. However, the discovery of fullerenes, the wonder carbon spheres made by the scientists Kroto et al. has led to a totally new concept of medical applications. This discovery has paved the way leading to a truly unconventional mode of therapeutics using fullerenes as medical adjuvants, with nearly minimal or negligible side effects. A fine attribute of fullerenes are their versatility, thus widening the horizon of their applications in the medical field as contrasting agents, diagnostic tools, drug and gene delivery agents, virus inactivators and various other dynamic, exceptional applications. The article below shall emphasize the details further.

Carbon is the chemical element with symbol C and atomic number 6. As a member of group 14 on the periodic table, it is non-metallic and tetravalent, making four electrons available to form covalent chemical bonds. Carbon is capable of forming many allotropes due to its valency. Allotropy or allotropism is the property of some chemical elements to exist in two or more different forms, known as allotropes of these elements. Allotropes are different structural modifications of an element; the atoms of the element are bonded together in a different manner. Allotropes of carbon include diamond, graphite, graphene, and fullerenes.

A fullerene is any molecule composed entirely of carbon in the form of a hollow sphere; helix or a tube. The first fullerene was prepared in 1985 by Richard Smalley, Robert D. Curl, James Heath, Sean O’Brien, and Harold Kroto at Rice University. The name was homage to Buckminster Fuller, whose geodesic domes it resembles.

An important property of C60 molecule is its high symmetry. There are 120 symmetrical operations, like rotation around the axis and reflection in a plane, which map the molecule onto itself. This makes C60 the most symmetrical molecule. The C60 fullerene surface contains 20 hexagons and 12 pentagons. All the rings are fused; all the double bonds are conjugated. In spite of their extreme conjugation, they behave chemically and physically as electron-deficient alkenes rather than electron rich aromatic systems. Those fullerenes are only stable which follow strictly the isolated pentagons rule are only stable, prominent examples being: C60, C70, C76, C84, and C90; in which each fullerene contains 2(10+ζ) carbon atoms corresponding to 12 pentagonal sites and ζ hexagons. This building principle is a consequence of Euler's theorem.

Fullerenes are formed when vaporized carbon condenses in an atmosphere of inert gas. The gaseous carbon is obtained e.g. by directing an intense pulse of laser light at a carbon surface.

The released carbon atoms are mixed with a stream of helium gas and combine to form clusters of some few up to hundreds of atoms. The gas is then led into a vacuum chamber where it expands and is cooled to some degrees above absolute zero. The carbon
clusters can then be analysed with mass spectrometry. However, this method proved to be tedious as well as expensive. Hence, a new method of fullerene synthesis was developed which utilized a platinum sheet heated to 750K on which the aromatic precursor of the fullerene was placed, which eventually led to the ends of the precursor forming a closed carbon structure equivalent to the fullerene. However, the difficult processibility of fullerenes has presented a major problem in their search for medicinal applications. C60 are insoluble in aqueous media and aggregate very easily. There have been several attempts to overcome the natural repulsion of fullerenes for water. The most widely used methodologies are to surface-derivate the molecule with various hydrophilic side chains so as to increase their efficiency in biological systems. Ever since their experimental discovery in 1985, fullerenes have attracted considerable attention in different fields of sciences. Investigations of chemical, physical and biological properties of fullerenes have yielded promising information. Their unique carbon cage structure coupled with immense scope for derivatization makes fullerenes a potential therapeutic agent.

MEDICAL APPLICATIONS OF FULLERENES

FULLERENES AS DIAGNOSTIC AGENTS

Endohedral metallofullerenes are the fullerenes with metal ion trapped inside fullerene cage. These have shown potential applications in diagnostics. As for example, water solubilised forms like that of endohedral gadofullerenes are being used as contrasting agents in Magnetic Resonance Imaging (MRI).

In today’s contrast agents, Gadolinium (Gd) is formulated in a chelate to prevent toxicity. The chelate agent is designed to be in the body for a short period of time and is cleansed through renal elimination. However, in kidney disease, the cleansing system slows down, which can allow the chelate and the Gd to separate – exposing the patient to the toxic metal. The new endohedral fullerene (Trimetasphere)-based agent completely encapsulates the Gd so the toxic metal molecules do not escape. Trimetaspheres are more sensitive MRI contrast agents when measuring relaxivity and the benefits for improving MRI sensitivity are numerous. Coupled with cell-targeting technology, improving relaxivity can enhance detectability of disease conditions, opening the application of MRI to new areas of medicine that were previously beyond current imaging capability. Additionally, future Trimetasphere-based contrast agents can allow for the design and production of smaller-scale, portable MRI systems.

Using Trimetasphere derivatives as new MRI contrast agents may provide physicians new ways to detect atherosclerotic plaque buildup in blood vessel walls. These targeted compounds are being developed to provide images of plaque buildup in the arterial walls of patients with Coronary Artery Disease (CAD). This would allow for earlier detection, providing practitioners and their patient's preemptive information before a myocardial infarction or stroke event. Currently, CAD is most-commonly diagnosed through an invasive procedure known as cardiac catheterization angiography.

FULLERENES AS ANTICANCER AGENTS

Recent research has enumerated that trapping C60 Buckyballs in lipid globes could deliver improved cancer treatments. Atsushi Ikeda and colleagues from the Nara Institute of Science and Technology in Ikoma showed that the carbon isotope C100 could be delivered into human cancer cells by hollow lipid spheres and used to induce cell death under visible light irradiation. An extension of this research is now applicable to fullerenes, opening avenues to a new area of targeted drug delivery, known as Photodynamic therapy (PDT).
In PDT, the fullerene is coated with antibodies specific to the membrane proteins on cancer cells and is tagged with a magnetic nanoparticle. The fullerene contains an entrapped cytotoxic drug molecule. The fullerene binds to the target cell due to the specific antibodies. On exposure to near-infra red LASER radiation, the fullerene changes into a carbon nanotube conformation, allowing easy passage of the drug on the target cell surface. The magnetic nanoparticles oscillate on exposure to the LASER, creating a magnetic field at the target site which further attracts more fullerenes towards the target site, thus achieving targeted cytotoxic drug delivery specific to cancer cells.

A water-soluble fullerene carboxylic derivative was found to be cytotoxic when exposed to visible light. In an initial experiment, C_{60} carboxylic acid was incubated with cultured cells for three days. No biological activity was observed. However on exposure to low power visible light, the compound killed the cells. It was later shown that cytotoxicity of C_{60} derivatives was mediated by its ability to cleave DNA. Fullerenes when tagged with a chain of nucleotides (predominantly Guanidine residues) common for both single and double stranded conformations of DNA are known to induce cell death. The fullerene forms a tri-helical aggregate in conjunction with the specific nucleotide sequence in DNA. On exposure to near infra-red LASER, DNA photocleavage is induced by means of generation of reactive oxygen species.

**ANTI-HIV ACTIVITY OF FULLERENES**

The enzyme aspartate protease specific to HIV-1 has been shown to be a viable target for antiviral therapy. The active site of this enzyme can be roughly described as an open-ended cylinder lined almost exclusively by hydrophobic amino acids except for two catalytic aspartic acid (Asp) residues- Asp 25 & Asp125.

Fullerene with amino derivatives complimentary to the Aspartate residues on the HIV protease bind specifically within the cavity of the enzyme, exactly complimentary to the aspartate residues of the enzyme, thus inactivating it completely. This inhibits the proliferation and replication mechanisms of the virus, thus significantly reducing its virulence. This development could revolutionize HIV treatment mechanisms in the near future.

**FULLERENES IN GENE DELIVERY**

Fullerenes with amino side chains are tagged with specific length of nucleotides to be incorporated in the DNA sequence. The fullerene once inside the nucleus, intercalate with the DNA molecules to form a triple helical structure. Due to recombination, the sequence tagged with the amino fullerene gets consequently incorporated within the DNA molecules. Structural modifications of further reinvented fullerenes give hope for increased expression of the incorporated nucleotide sequence. This development, if made possible *in-vivo*, could aid in the materialization of gene therapy in clinical practice.

**CONCLUSION**

Fullerenes have proven to be non-toxic when well-characterised, non-aggregated, single-species fullerenes are used under physiological conditions. Even in doses as high as 5mg/kg of body weight in mice, they exhibited no adverse biological effects.

Only adverse concern would be the possibility of immune reactions when the fullerene is recognised as an antigen. However, recent efforts like coating therapeutic fullerenes in membranes derived from a person’s white blood cells can aid in overcoming this hurdle too in the near future.

Fullerenes, thus pose as a great diagnostic and therapeutic tool exhibiting the dual benefits of specificity in targeting and reliability with the assurance of no adverse side effects.
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LIFE SKETCHES OF OFFICE BEARERS, SECTIONAL PRESIDENTS & RECORDERS
OF THE INDIAN SCIENCE CONGRESS ASSOCIATION, 2015-2016

DR. ASHOK KUMAR SAXENA
General President

Dr. Ashok K Saxena obtained his Masters degree in Zoology in First Division from Meerut University Meerut in 1967, his Ph.D degree from Kanpur University, Kanpur in 1973. Dr. Saxena has more than 43 years teaching experience of Post Graduates and Degree classes. He first joined as a Lecturer in the Deptt. of Zoology, DAV College Kanpur, U.P. in 1967 and became Reader in 1986 and served as a Principal, from 2005 to 2010. Dr. Saxena also served as a Convener of the Board of Studies in Zoology of CSJM, University, Kanpur. He retired as a Dean Faculty of Science, CSJM, University, Kanpur in June, 2010.

DAV College, Kanpur established in 1919, had its own glory in the past. Many Freedom Fighters happen to be the students of this college like Shri Shiv Verma, Shri Surendra Pandey, Shri Jaidev Kapoor, Shri Mahaveer Singh, Shri Saligram Shukla and our Former Prime Minister of India Shri Atal Bihari Bajpai is also the Former student of D.A.V. College, Kanpur. There were also so many Distinguished Personalities who were the students of D.A.V. College and were awarded Padam Shree and Padam Bhusan from the Govt. of India like Padam Shree and Padam Bhusan Shri Gopal Das “Neeraj”, Padam Shree and Padam Bhusan Prof. S.S.Katiyar, Former Vice Chancellor, CSJM, University, Kanpur and Padam Shree Shri K.L.Nandan, Shri Shyam Narain Panday and Dr. Maheep Singh.

The college has three Post Graduate Faculties i.e. Arts, Science and Commerce. Ph.D., programme in all 28 subjects in the College. The D.A.V. College having about 24,000 students on its rolls is the biggest college having about 750 Teaching and Non Teaching staff. The college was Accredited as B++ in 2007 by the NAAC Committee during the regime of Dr. Saxena as Principal.

Dr. Saxena is the Emeritus Fellow of U.G.C., New Delhi (2011-2013) in the Deptt. of Zoology, D.A.V. College, Kanpur. At present Dr. Saxena is the Fellow of Sir Asutosh Mookerjee of ISCA (2013-2016) and Advisor KIIT Univ Bhubaneshwar.

Dr. Saxena has 45 years of Research experience and under his research guidance 27 students have been awarded Ph.D. degrees. He has got published more than 69 Research papers in National and International Journals. Dr. Saxena has more than 21 publications in the form of Books, Symposia Proceedings. He is Convener of the Editorial Board of “Trends In Life Sciences” an International Journal, Member Editorial Board of “Life Science Advances” an International Journal and Referee of ICAR Krishi Bhavan, New Delhi. He is also Editor in Chief of “Everyman’s Science”, bimonthly journal of ISCA.

Dr. Saxena also completed number of Major and Minor Research Projects of UGC., CSIR., DST., DBT, New Delhi. Dr. Saxena also completed an International Joint Research Project Sanctioned from J.S.P.S.Japan (Japan Society for Promotion of Science and Research, Tokyo, Japan) with the International Scientist from Hiroshima University, Tokyo University along with Delhi University.
Dr. Saxena has received several honours/awards in recognition of his meritorious research works. Some of which are: Recipient of Gold Medal of Indian Academy of Environmental Science Hardwar 2012, Felicitated by Zoological Society of India on the Occasion of 22nd All India Congress of Zoology held at University of Lucknow, Lucknow 2011, Member of Advisory Board of Asian Journal of Experimental Sciences, N.M. Basu Memorial Award, 2009 for the Contribution towards innovative research at Frontiers of science with intellectual and potential Leadership 2009 Kolkata, Life time achievement Award for glorious contribution in the field of Zoology at the Nat. Seminar on Innovations in Biosciences held at D.B.S.College, Kanpur 2006, Member of the Research Board of Advisors American Biographical Institute, Research Fellow American Biographical Institute. Zoological Society of India Gold Medal Awarded for the Contribution to Life Sciences, International Award of Recogniton 5000 Personalities of the world for outstanding Services to the research and teaching Profession by American Biographical Institute, Lions Club International Awarded Shiksha Seva Puraskar on 20 June 1998 at Kanpur.

Dr. Saxena is also Life member of different Academies/Societies and has been associated with a number of Professional Societies including Founder General Secretary Indian Society of Life Sciences. He has been associated with the Indian Science Congress Association from the last 35 years and was First Elected as a Member of Sectional Committee of the Section of Zoology, Entomology and Fisheries of ISCA. He was also elected as a Recorder of the Section of Zoology, Entomology and Fisheries for two years i.e. 1992-1993 and 1993-1994. Later he was elected as a Council member in 2004-2005 and 2005-2006 and then Elected as a Member of Executive Committee of ISCA in 2006-2007. In 2007 Dr. Saxena was elected as a General Secretary (Out Station) of ISCA for the period of three years i.e. upto 2010. Dr. Saxena was again Elected as an Executive Member of ISCA in 2010-2011, 2011-2012 and 2012-2013.

Dr. Saxena was invited to attend the meeting of American Association for Advancement of Science (AAA) San Dieago, California USA in 2010. He was invited to deliver a talk at SKKU University, South Korea, and by the American Association of Advancement of Sciences to attend their 80th Annual Meeting held at Boise State University, Boston, USA in 2008. He has travelled World wide viz : Italy, Germany, France, Issenbruck, Austria, Malaysia, Singapore, Hong Kong, South Korea, etc. Dr. Saxena has organised more than 25 National & International Symposums Conferences in different parts of India.

Born on 14th day of July, 1956, Dr. Nilangshu Bhusan Basu graduated in Civil Engineering from Bengal Engineering College in the year 1977 with distinction. He completed his Master's degree in Structural Engineering from Jadavpur University in the year 1983 with distinction and successfully undergone training in River Basin Management at Thames Water Authority, U. K. in the year 1989. Completed his PhD in Environmental Engineering. He has served as Chairman of Architectural Engg. Division of Institute of Engineers, West Bengal Chapter. He is also adorning the honoured post of the Vice President at the Institute of Public Health Engineers. Presently, he is working at The Kolkata Municipal Corporation in the capacity of the Principal Chief Engineer (civil). Under the supervision of his Engineering skills, a good number of infrastructure projects for the city of Kolkata have
been completed successfully. 40 MGD water treatment plant at Palta, 100 MGD pressure station for clear water at Palta, 100 MGD intake jetty with intake station of Palta, Networking for water mains, Booster pumping stations at Park circus, Bagmari, Ranikuthi, Kalighat Drainage pumping station of Southern Avenue, Automated computerized car parking system at Rowdan street (over ground) at Lindsay street (underground) etc., are only a few among the large number of successful projects that he has so far undertaken. All the JNNURM projects of KMC worth 1000 crores had also been formulated and has been executed in his leadership. These prestigious projects include 137 year old underground brick sewer rehabilitation of Kolkata. He has also been invited to deliver lectures in many National and International seminars in India and Abroad and has a number of International publications in prestigious engineering magazines too.

**PROF. ARUN KUMAR**

*General Secretary (Scientific Activities)*

Prof Arun Kumar has over 31 years of teaching and research experience in Department of Earth Sciences, Manipur University. He initially started his research in the field of fluvial geomorphology with application of GIS and Remote using techniques in the watersheds studies in Manipur. He has carried out the landslide hazards studies along the National Highways in Manipur, North Eastern, Jammu & Kashmir and Himachal Pradesh India.

He has established number of seismic observatories in Manipur as well as NE India to monitor the ongoing seismological status as the region of Manipur, falls under highest Seismic Zoning map of India. He created the earthquake hazard awareness in a scientific manner in many schools in NE region where school children can witness to measure the earthquake epicentre parameters in their school earthquake laboratories. Approximately sixty observatories are operational in various higher secondary schools in the NE India.

A multi-parameter geophysical observatory is established at Imphal, Manipur to observe the earthquake precursor phenomenon by using the geo-electric, electromagnetic, magneto-telluric, seismic & microstrain through boreholes and anomalies due to the crustal deformations. He has continued the crustal deformation measurements along active faults in (Swalbard) Arctic Region, which is quite interesting in estimating the Isostatic Rebound phenomenon for ongoing climate change. Recently he visited Nepal after 25th April 2015 (7.8 M Earthquake) to study the earthquake parameters and damages in the country in June 2015. The entire research activities are financially supported by the Ministry of Earth Sciences (MoES), Science Technology, Ministry of Environment & Forest (MoEF) Government of India. He is presently the members of Programme Advisory Committee (Seismology Programme) of MoES and Expert Advisory Committee of Hydroelectric & River valley Projects of MoEF. He has travelled various countries for attending International conferences, training programmes and research activities. More than fifty research articles in various International and national journals are published. Besides, two volumes are edited and contributed a scientific database on water balance of small watershed from Manipur. Ten students have been awarded and six are in progress for their Ph. D. degree. He has trained many of his research scholars and M. Sc. students in GIS, Remote Sensing and Seismology. He is active member of The Indian Science Congress Association, Kolkata and enjoyed the elected post of Sectional President (ESS Section, 98 ISCA).
Professor Dhyanendra Kumar is presently Professor, Department of Zoology, Veer Kunwar Singh University, Arrah, Bihar. He was Dean faculty of Science and was Coordinator College Development Council of the University. He was also coordinator of Vidya-Sagar classes (a Video Conferencing Class-room programme) of the University. He is also a member (eastern zone- RAC) of central Board of Workers Education (CBWE) under Ministry of Labour and Employment, Government of India.

He did his M.Sc. and Ph.D from Visva-Bharati University, Santiniketan. During his M.Sc. Classes he was selected to represent Visva-Bharati at Diamond Jubilee Session of ISCA at Chandigarh (1973) as a student delegate. He was also selected among 52 students across the country as a Post-Graduate Meritorious Student to attend Summer Institute at Porto-Novo, Annamalai University, organized by U.G.C. in 1972. He was Senior Research Fellow under Council of Scientific and Industrial Research at Visva-Bharati, Santiniketan (1976-1978) and obtained his Ph.D. degree in 1978.

Professor Kumar has more than 39 years of teaching and research experience and has successfully supervised 17 students for the award of Ph.D. degree. Presently eight students are working under his supervision for their Ph.D. degree. He is presently working on effect of pollutants on enzyme activity and also working on endocrine disruptors and has published more than 50 papers in the journals of National and International repute. He was the Executive Secretary of 6th International Congress of Asia Oceania Society for Comparative Endocrinology (An International organization of 19 countries).

He has also represented ISCA and the Country at University of Kelaniya, Colombo- Sri Lanka at 65th Session of SLAAS (Sri Lanka Academy of Advances of Sciences). He was awarded 50000 Yen in 1990 to attend International Congress of Ecology at Yokohama, Japan. He is in the editorial Board and reviewer/ referee in a number of Journals of National and International repute. His research papers were accepted for presentation in several Seminars/Symposia at Japan, USA, Thailand, Egypt, Netherland and China. He has organized and chaired various sessions of the International and National conferences on the topics like molecular signaling, endocrine disruptors, fishtoxicity, biodiversity and other environmental related issues.

Professor D. Kumar has worked as a Recorder in the Section of the Environmental Science of ISCA in 2005 at Ahmedabad. He was also a member of the Executive Committee of the Society of Reproductive Biology and Comparative Endocrinology. He was the Member Council from 2006 and 2011 and member of the Executive Committee from 2008 to 2011 of The Indian Science Congress Association.

Dr. Kaushik Majumdar is the Director of South Asia Program of International Plant Nutrition Institute (IPNI), located at Gurgaon, India.

Dr. Kaushik Majumdar is the Director of
South Asia Program of International Plant Nutrition Institute (IPNI), located at Gurgaon, India.

He did his undergraduate studies at the Visva Bharati University, M.Sc.(Ag) degree in Agricultural Chemistry and Soil Science from Bidhan Chandra Krishi Viswavidyalaya, India, and Ph.D. in Soil Mineralogy/Soil Chemistry from Rutgers University, U.S.A.

At the initial part of his career, Dr. Majumdar has worked at the Potash Research Institute of India as a Soil Mineralogist. Later he joined the Potash & Phosphate Institute of Canada-India Programme as the Deputy Director of Eastern India & Bangladesh. Dr. Majumdar moved to his current position as the Director, South Asia Program of International Plant Nutrition Institute, in 2009.

Dr. Majumdar works closely with the National Agricultural Research & Extension Systems (NARES), International Organizations and the Fertilizer Industry across South Asian countries for generation and dissemination of scientific knowledge on plant nutrient management.

Dr. Majumdar has been closely involved in the development of several fertilizer decision support tools to help implement site-specific nutrient management strategies in on-farm situations in South Asia. He has published several technical bulletins and training aids to disseminate improved nutrient management in crops and cropping systems, and has over 70 national and international scientific publications.

Dr. Majumdar serves at the editorial boards of the Journal of the Indian Society of Soil Science and Annals of Plant and Soil Research. He also serves as the Joint Secretary – The Clay Minerals Society of India, Member – Technical Advisory Committee, Digital Green, and Member – Advisory Committee on Agricultural Sciences, The Fertiliser Association of India.

PROF. PRABHU NATH PANDEY
President
Section of Animal, Veterinary and Fishery Sciences

Dr. Prabhu Nath Pandey, former University Professor Post Graduate Department of Zoology, Ranchi University, Ranchi (Jharkhand) born on 22 January 1948 in Bihar. He passed B.Sc. (Hons.) in Zoology (Gold Medallist) from Ranchi College, Ranchi and M.Sc. (Zoology) from Ranchi University, Ranchi, and later obtained Ph.D. degree. He was recipient of National Merit Scholarship during student life.

Prof. Pandey, started his teaching career from RSP College, Jharia in 1972 and later joined Post Graduate Department of Zoology, Ranchi University, Ranchi in 1974 as Lecturer. After that he became Reader in the same department and Professor in 1989.

Prof. Pandey has 38 years of teaching and research experience and has successfully guided 15 Ph D and 1 (one) D.Sc. degree, published more than 80 research papers in National and International journals of repute, and has participated/presented papers in 64 seminar/symposia including International conferences. He has authored 20 books and written 6 book chapters. He has chaired/Co-
chaired many seminars and symposium. He is presently editor of journal- “Proceedings of the Zoological Society of India”.

Dr. Pandey is Fellow of Zoological Society of India, Bioved Research Society of India, Indian Academy of Environment Science and Inland Fisheries Society of India and life member of many other societies.


Prof. Pandey was elected General Secretary of Zoological Society of India (2004-2008) and later was elected President of Zoological Society of India (2008-2010). He was also elected member of sectional committee ISCA (2000).

Prof. Pandey has enjoyed the administrative positions as Member Board of Management Central Institute of Fisheries Education (CIFE, ICAR), Versova, (Deemed university) Mumbai 1989-91 and as member Academic Council, CIFE, ICAR 2006-2008 and also as member of a sub-committee of Planning Commission.

Prof. Pandey has worked in different field of ecology; entomology and ichthyology, his most important contribution are in the field of benthic ecology specially on longitudinal zonation of benthic fauna in lotic ecosystem and pattern of colonization and succession of benthic fauna in reservoir. His contribution are also significant in the field of ecology and biochemistry of Tasar Silk worm, mulberry silk worm and overall performance of Tasar silk worm.

Dr. N.K. Saksena was born on March 24, 1936 at Gwalior (M.P.). His family shifted to Kanpur, U.P. 1941. He received his early, secondary and higher education at Kanpur. He obtained his Master’s Degrees in Psychology and Sociology. He was appointed as a lecturer in D.A.V. College in Kanpur in 1960 where he taught degree and post-graduate classes. While in service as a lecturer of post-graduate classes he completed his Ph.D. in 1967 on the topic, "Emotional Integration: Factors in the Way of Its Achievement". In his doctoral research he studied various types of inter-group prejudices (Caste, Religious and Linguistic) affecting achievement of emotional integration. He considered emotional integration as a pre-requisite to National Integration which is so vital for the development of the country.

He was appointed as Reader and Head of the Post Graduate and Research Department of Psychology at P.P.N. College Kanpur (Kanpur University now C.S.J.M. University Kanpur), in August 1969. 19 candidates have been awarded Ph.D. degrees under his supervision.
He was appointed as Principal (Prof. Scale) in 1978 and retired in 1996 after serving as principal for 18 years. After his retirement he was appointed as founder director of Jagran College of Arts, Science and Commerce and Jagran Institute of Management and Mass Communication at Kanpur. He also served as Director Harmilap Mission Senior Secondary School. Presently he is Director of Pt. D.P. Mishra Memorial Educational Society at Kanpur.

Dr. Saksena published and/or presented more than 85 research papers in Indian and International Journals of repute. He has been attending Indian Science Congress Sessions almost regularly since 1973. Besides ISCA, Dr. Saksena is life member of several other associations of Psychology. He has been participating in the activities of these associations and chairing scientific sessions.

Dr. Saksena attended XVIII Conference of International Association of Applied Psychology held at Montreal (Canada) in 1974 and II Conference of International Association of Cross-Cultural Psychology at Queens University, Kingston (Ontario-Canada) 1974. He also attended III Conference of International Association of Cross-Cultural Psychology held at Tilburg University (Holland) in 1976 and chaired Social Psychology Section and XIX Conference of International Association of Applied Psychology held at Munich (Germany) and chaired Scientific Session of Attitude Research in 1978.

Rashtriya Gaurav Award was conferred on him in 2004 at Chandigarh by India International Friendship Society. All India Conference of Intellectuals awarded him U.P. Ratan in 2006 (Lucknow). Indian School Psychology Association conferred on him School Psychology Award in 2013 (Chennai). In January 2015 he has been awarded fellowship of Indian Academy of Applied Psychology (Tirupati).

Professor Rajeev Jain did his Ph.D. in Chemistry from the university of Roorkee (now Indian Institute of Technology, Roorkee), India, in 1978. He worked as Post Doctoral Fellow and Research Associate at University of Roorkee, Roorkee. He was awarded D.Sc. degree by Jiwaji University, Gwalior, India in 1990. He joined Jiwaji University, Gwalior, India in 1982 as lecturer, became Reader in 1988 and subsequently Professor in 1998 at the same University. Currently he is working as Professor of Chemistry and Director Institute of Engineering, Jiwaji University, Gwalior (Ex. Head of Chemistry; and Environmental Chemistry, Ex. Dean College Development Council; and Dean Science Faculty).

Professor Jain is a highly cited researcher in Electroanalytical and Environmental Engineering Chemistry. Dr. Jain has published over 300 research papers in journals of international repute with high impact factor. He has supervised over 75 Ph.D. and one D.Sc. student. He is a widely traveled researcher and has worked over on 15 research projects sanctioned by CSIR, UGC, MOEF, and DRDO etc. His research interests include electroanalytical behaviour of pharmaceuticals, micellar catalysis, electrocatalysed reactions, chemical sensors, method development and validation, environmental engineering chemistry and wastewater treatment.
Dr. Tejender Nath Jowhar, born on 15th November, 1955 at Delhi, obtained his B.Sc. degree in 1976, M.Sc. in 1979, M.Phil. in 1980 and Ph.D. degree in 1986, all from the University of Delhi. He is currently serving as Scientist ‘F’ at the Wadia Institute of Himalayan Geology (An Autonomous Institution of Department of Science and Technology, Government of India), Dehradun. Dr. Jowhar also has five years of teaching experience at Department of Geology, University of Delhi as Lecturer (1982-1986) and Reader (1997-1998). He has twenty nine years of research experience at the Wadia Institute of Himalayan Geology. His field of specialization and research interests are in Igneous and Metamorphic Petrology, Himalayan Geology, and Computer Applications in Earth Sciences.

Dr. Jowhar has Ph.D. from Delhi University in the year 1986. He was awarded Post-Graduate Scholarship by the University Grants Commission during 1976-1979, Junior and Senior Research Fellowship by the Council of Scientific and Industrial Research during 1980-1984. His thesis involved an extensive application of thermodynamic concepts and related tools to the stability of mineral phases, then a state of art topic, and received high appreciation from his examiners. He developed it further and came up with a formulation of K-Na exchange between K-Feldspar and muscovite in a granitic assemblage.

During his early days as Research Scholar at Delhi University, Dr. Jowhar took keen interest in learning computer languages, particularly, FORTRAN and has published several packages with its application to petrology. His chance discovery of error in a WIPRO package in 1988 earned him respect all around and received an appreciation from Minister of State, Department of Science and Technology for detecting software defect in the WIPRO Fortran Compiler.

During his tenure at the Wadia Institute of Himalayan Geology (from 1986 to till date), Dr. Jowhar took up systematic geological studies on several regions of the Himalaya, particularly Ladakh, Garhwal and Kumaun. His significant contributions in the field of Earth Sciences include: reformulation of Alkali feldspar-muscovite geothermometer and its application to the Badrinath Crystalline Complex, Gangotri and Amritpur granite in the NW Himalaya; documentation of quantitative depth of emplacement and exhumation history of the Ladakh granite from the Ladakh batholith, Northwestern Himalaya; development of Petrological Data Base on Himalayan Granite, development of rapid X-ray diffraction method for determination of lattice parameters and structural state of alkali feldspars, and development of Several computer programs for mineralogical/Petrological and geothermobarometric calculations and their utilization for geothermobarometric investigations.

Dr. Jowhar served as Recorder of Earth System Sciences section during 2006-2007 and 2007-2008 (94th and 95th ISC) and also delivered invited talks in this section during 2011-2015. He is member of several professional bodies and have participated and presented papers in several National and International Symposia and also gave invited talks and Chaired sessions in conferences. He is Fellow of the Geological Society of India, Mineralogical
Society of India and Fellow of the Indian Geological Congress. Dr. Jowhar was Vice-Chairman and Chairman of the Computer Society of India (CSI). Dehradun Chapter for the year 2013-2014 and 2014-2015 respectively. He has also been elected this year as Member of The National Academy of Sciences, India and Council member of the Indian Mineralogist.

He has been involved in several training courses organised for students and Research Scholars at the Wadia Institute of Himalayan Geology and in various Universities in India, during the last thirty-five years. In 1987, Dr. Jowhar was involved in the trainings provided to scientists from the Institute of Geosciences, USSR Academy of Sciences, Moscow. He also presented a national report at Hungarian Academy of Sciences, Budapest, Hungary in 1989. Recently he organised and was the Course Coordinator of “WIHG Winter School in Geomathematics” held at Wadia Institute of Himalayan Geology, Dehradun and sponsored by Science and Engineering Research Board, (SERB), DST, GOI.

Prof. Asis Mazumdar, Dean, Faculty of Interdisciplinary Studies, Law & Management, Jadavpur University, Professor & Director, School of Water Resources Engineering and also the Coordinator, Regional Centre, National Afforestation & Eco-Development Board, (Ministry of Environment & Forests, Govt. of India), Jadavpur University has been carrying out research in the field of Climate Change, Water Resource Management and Sustainable Management of Natural Resources.

Prof. Mazumdar was born in 1961 and obtained his Bachelor of Engineering degree in Mechanical Engineering, Master and PhD in Fluid Mechanics and Hydraulic Engineering from Jadavpur University. Prof. Mazumdar has been nominated as member of the Board of Governors, Tripura Institute of Technology by the Hon’ble Governor of the State of Tripura. He has been carrying out research on “Carbon Sequestration” under DST Mission.

Prof. Mazumdar represented India in the Tsukuba Asian Seminar (under the auspices of UNESCO) on 07th-13th Nov, 2006 at Tsukuba University, Japan. He participated in a Collaborative Research Programme with the Sciences and Techniques for Civil Engineering, the Department of Civil Engineering, University of Pisa, Italy in 2007. He also participated in the Collaborative research programme on “Research Issues for Riverine Bank Stability Analysis in the 21st Century” in the Iowa Institute of Hydraulic Research, The University of Iowa, USA in 2006. He delivered 8th Prof. N. Majumdar Memorial Lecture at The Institution of Engineers, Kolkata on 20th March, 2007. He also reviewed several national and international reputed journals. He was the members of the Steering Committee of West Bengal State Compensatory Afforestation Fund Management & Planning Authority (CAMPA).

Prof. Mazumdar prepared the State Report on National Programme on Promoting Medicinal Plants Conservation and Traditional Knowledge for Enhancing Health and Livelihood Security for West Bengal (UNDP-CCF-II Project No. 13047), Department of Forests, Govt. of West Bengal. He has also nominated as expert member of the High Power Committee for Rejuvenation and Development of Wuler Lake in Kashmir, Govt. of Jammu & Kashmir, 2010 and by the National River Conservation Directorate under Ministry of Environment & Forest,
Govt. of India, as the project coordinator for evaluation of DPRs for Projects related to National Ganga River Basin Authority / National River Conservation Plan.

Prof. Mazumdar so far published 52 papers in International Journals as well as 75 papers of National Journals of repute. He has so far supervised 24 Ph.D candidates and 92 ME scholars.

Born on 14.11.1946 in village Salgawan, district Hazaribag, Jharkhand, Prof G.D.Mishra did his B.Sc (Hons) in Chemistry from St Xavier’s College, Ranchi in 1967 securing a Gold Medal. He got another Gold Medal in 1969 standing First class First in M.Sc. from Ranchi University (Organic Chemistry as special paper). He was awarded Ph.D. degree in 1975. Prof. Mishra joined Ranchi University, in 1970, as a lecturer in Chemistry at Ranchi College, Ranchi. In 1981, he was appointed Reader in Chemistry (UGC Post) in the Post Graduate Department of Chemistry, Ranchi University, Ranchi. In 1986, he was appointed as a University Professor of Chemistry. He headed the Post Graduate Department of Chemistry for more than four years and later was appointed Dean Faculty of Science, Ranchi University. He retired on 1.12.2008.

His first book entitled Fundamental Concepts of Chemistry was published in 1977 by Motilal Banarsidass, Delhi. Over a span of 20 years, a total of 17 books of chemistry both in English and Hindi were written and published by Prof Mishra.

His major fields of research are: 1. Environmental chemistry 2. Medicinal plants 3. Oxidation of organic compounds.

Prof. Mishra has used di-Tertiary Butyl Chromate (TBC) for oxidizing various types of organic compounds. A large number of products were obtained during these oxidation processes. The nature of products has thrown light on the mechanism of reactions. Some products have been found to be explosive in nature. He has published about 40 research papers in various journals. So far, 35 students have received their Ph. D. degrees under Prof. Mishra’s guidance.

Another area of interest of Prof. Mishra is the study of pollution in Jharkhand. A number of interesting findings were noted by the research team of Prof Mishra. They have studied the cause and effects of pollution inflicted by various industrial establishments in Jharkhand. A large number of industries like Heavy Engineering Corporation, Muri Aluminium factory, IEL, Gomia, various coal washeries etc were studied for their contributions in polluting various rivers of Jharkhand. These rivers include Damodar, Suvarnrekha, Konar etc. They have suggested various remedial measures for eliminating or lowering the effects of various types of pollutions caused by these industries.

Yet another landmark interest of Prof Mishra is the study of medicinal plants of Jharkhand. After his retirement from the University service he has established his company ‘Dr Mishras’ Laboratories Pvt Ltd, Ranchi which is registered under Indian Company act. He has studied the medicinal potency of some plants and herbs of Jharkhand and has developed a few herbal medicines with very satisfactory results. After securing manufacturing license from Jharkhand Government in 2012, a few products have been made available in the market under registered Trade Mark. (www.drmishralab.com).
Professor Dr. K. V. Kale is currently working as a Director, B C U D of Dr. Babasaheb Ambedkar Marathwada University, Aurangabad, Maharashtra. He was former Head of Department of Computer Science and IT at University. He was Director of University Network & Information Center. He is also a Program Coordinator of UGC SAP DRS phase I and II and DST FIST Program. He has established and developed Multimodal Biometrics Research Laboratory (MBRL) as a unique national Laboratory, RS and GIS, Pattern Recognition and as a centre of excellence in teaching and research in biometric and advance Image processing technology in university. He is also working as School Coordinator of School of Computational and Physical Sciences of this university. He has more than 26 years of experience in research, innovation and teaching at UG, PG and PhD level.

He has published more than 250 National and International research articles. The current total impact factor of his research is more than 41, with h-index of 10 and i10-index of 12. He has given number of plenary lectures and Chaired Sessions. He has supervised 28 Ph.D. and 04 MPhil for their research degree. Currently 07 PhD students, 04 M.Phil. students and 09 M. Tech (CSE) scholars are working with him. His research area includes Remote Sensing and GIS, Image Processing, Pattern Recognition, Computer Vision, Software Engineering, Artificial Intelligence, Neural Network, etc. He is Editor in Chief of International Journal on Computer Science and Information Technology and on editorial board of number of research journals. He has successfully completed 4 major research projects and working on 3 projects at present. He has developed and designs a new algorithms and methods for fingerprint, face, palm, iris and other biometrics modalities and developed a multimodal biometric recognition system.

Professor Kale has several academic honors and professional distinctions to his credits. He is Senate member of this university. He was the recipient of VIJAY SHREE Award for his meritorious services, outstanding performance and remarkable role in the field and bio-graphed in Who’s Who in the world at USA. He was also the recipient of the most prestigious One Time Research Grant from UGC for research and development (2011-2012) on biometrics system development. He is also a recipient of International Amazing Idea Award by SAI International (USA) in 2013 at LONDON and excellent paper award at IACSIT International Conference (ICCEE-2013) at Paris, France.

He is also a fellow, life member and member of number of International organizations like International INNS-IEEE, OGC, IACSIT, IAENG, Signal Processing Society, Communications Society, Computer Society, Geoscience and GRSS, Green-ICT Community, IoT Community, Life Sciences Community, and national organizations like CSI, IPA, IUPRAI, ISCA, SIGAI, C-DAC, IAO, and many more. He is fellow member of IETE and SSARSC, and served for IETE as Chairman of Aurangabad Center. He has been working on various statutory authorities of state universities, in different capacities such as Chairman and Member.

During 2003-2007 served as Member of U.P. Secondary Education Service Selection Board, Allahabad (Biggest Service Commission in Asia). Also served as Expert Member, U.P Public Service Commission, M.P Public Service Commission, Subject Expert for Selection of Project Fellows, J.R.F., S.R.F. and Research Associates for DRDO, Member, Syllabus preparation committee of C.S.J.M. University, Kanpur, Resource Person in Academic Staff Colleges of different universities, Resource Person in National Council of Educational Research And Training (NCERT), Delhi. Keynote Speaker in various National and International Seminars, Resource person/panelist in group discussion by news channels & All India Radio, Kanpur. Member of Jury for lab level cash awards including Scientist of the Year Award for Defence Material & Stores Research & Development Establishment (DMSRDE), Kanpur, DRDO, Ministry of Defence, Government of India. Member of Jury, INSPIRE Award Scheme, Department of Science & Technology (DST), Government of India.


During 2003-2007 served as Member of U.P. Secondary Education Service Selection Board, Allahabad (Biggest Service Commission in Asia). Also served as Expert Member, U.P Public Service Commission, M.P Public Service Commission, Subject Expert for Selection of Project Fellows, J.R.F., S.R.F. and Research Associates for DRDO, Member, Syllabus preparation committee of C.S.J.M. University, Kanpur, Resource Person in Academic Staff Colleges of different universities, Resource Person in National Council of Educational Research And Training (NCERT), Delhi. Keynote Speaker in various National and International Seminars, Resource person/panelist in group discussion by news channels & All India Radio, Kanpur. Member of Jury for lab level cash awards including Scientist of the Year Award for Defence Material & Stores Research & Development Establishment (DMSRDE), Kanpur, DRDO, Ministry of Defence, Government of India. Member of Jury, INSPIRE Award Scheme, Department of Science & Technology (DST), Government of India.

Positions held includes Director, College Development Cell, Recorder, Chemical Sciences Section, Indian Science Congress Association, Kolkata (Year 2012-13 & 2013-14). Member, Executive committee, Indian Council of Chemists,
Director, College Development Cell, Advisor, Equal Opportunity Centre, Coordinator, Internal Quality Assurance Cell, Coordinator: Career Oriented Certificate Course Sponsored by University Grants Commission, New Delhi, Member, Anti Ragging Committee of Kanpur District, Formerly Director and Advisor of I.C.T. Lab and Hostel Warden, VSSD College, Kanpur.

Apart from his active academic and administrative career, he has been associated with a several professional and scientific organizations as Fellow or Life Member, executive committee member. For Scientific and Social Studies, he visited various countries like Thailand, Bangladesh, Nepal, Malaysia and Singapore and United Arab Emirates.

DR. SNEHASHISH CHAKRAVERTY
President
Section of Mathematical Sciences
(including Statistics)

Dr. S. Chakraverty is having experience of 26 years as a researcher and teacher. Presently he is working in National Institute of Technology, Rourkela, Odisha as a full Professor and Head of the Department of Mathematics. Prior to this he was with CSIR-Central Building Research Institute, Roorkee, India. After completing Graduation from St. Columba’s College (Ranchi University), his career started from University of Roorkee (Now, Indian Institute of Technology Roorkee) and did M. Sc. (Mathematics) & M. Phil. (Computer Applications) from there securing the First position in the university. Dr. Chakraverty received his Ph. D. from IIT Roorkee in 1992 and the comment of his Ph. D. thesis was ‘Thesis Adjudged Meritorious and a Sound Piece of Work’. There after he did his post-doctoral research at Institute of Sound and Vibration Research (ISVR), University of Southampton, U.K. and at the Faculty of Engineering and Computer Science, Concordia University, Canada. He was also a visiting professor at Concordia and McGill universities, Canada, during 1997-1999 and visiting professor of University of Johannesburg, South Africa during 2011-2014. He has authored 4 books and published 211 research papers (till date) in journals and conferences. He is in the Editorial Boards of various International Journals, Book Series and Conferences. Dr. Chakraverty is the Chief Editor of *International Journal of Fuzzy Computation and Modelling* (IJFCM), Inderscience Publisher, Switzerland and happens to be the Guest Editor for other few journals. He is also the reviewer of around 50 national and international journals of repute and was the Vice President – Orissa Mathematical Society (2011-2013). Dr. Chakraverty is recipient of few prestigious awards viz. Platinum Jubilee ISCA Lecture Award (2014), CSIR Young Scientist (1997), BOYSCAST (DST), UCOST Young Scientist (2007, 2008), Golden Jubilee Director’s (CBRI) Award (2001), INSA International Biletral Exchange Award ((2010-11 (selected but could not undertake), 2015 (selected)), Roorkee University gold Medals (1987, 1988) for first positions in M. Sc. and M. Phil. etc. He has already guided seven Ph. D. students and seven are ongoing.

Dr. Chakraverty has undertaken around 15 research projects as Principle Investigator funded by international and national agencies. A good number of International and national Conferences, Workshops and Training programmes have also been organised by him. His present research area includes Numerical Analysis, Differential Equations, Mathematical Modeling, Soft Computing and Machine Intelligence, Uncertainty Modelling, Artificial Neural Network, Fuzzy and Interval Computations, Vibration and Inverse Vibration Problems.
Dr. C. R. Maity was born in a remote village of Midnapore (now Midnapore East) Contai subdivision on 14.01.1946. He completed schooling from Basantia High School and college from Prabhat Kumar College, Contai. He joined Calcutta National Medical College for medical graduation and successfully completed the course in 1968. After that he completed all house surgionship in general and cardiothoracic Surgery. He went to Benaras Hindu University and joined as a Demonstrator in the department of Biochemistry and after that he joined as MD student in Biochemistry in 1970. After completion of MD in 1972, he migrated to North Bengal University Medical College as a Lecturer in Biochemistry. In 1974, he joined as a Reader and Head of the Department of Biochemistry in the Burdwan University Medical College. Ultimately he was elevated to the rank of Professor in 1979. He completed PhD from Calcutta University. He was the Dean of Faculty of Medicine, University of Burdwan, Burdwan. After serving as a Principal of Burdwan Medical College till 2001; he joined as Director of Medical Education of Government of West Bengal in 2001. He was a member of Public Service Commission for about three years. In 2008, he joined as Professor of Biochemistry and Chief Advisor in KPC Medical College, Jadavpur. He was the member of Medical Council of India and member of Post Graduate Committee of Medical Council of India.

Prof. Maity started research on metabolic changes in breast cancinnoma in early 70’s. Then he studied Parasite biochemistry, isolation of Protein and oil from different agro waste such as eucalyptus, jute, koronjia, neem etc to make non edible to edible and also how to use non edible oil in industry, autoradiographic study in spermato genesis etc. Ultimately he concentrated on snake venom research since 1980s and at present he is interested in diabetes mellitus. During this period he has completed about 10 major research projects from different national and state funding agencies. Under his supervision more than 30 PhDs and 15 MDs were awarded. About 200 papers are credited to his publications. He attended and organised different state, national and international conferences and symposiums. He became the president of Association of Biochemist of India, President of Toxinology Society of India. He is the Editor in Chief of journal of Medical Biochemistry of India. He acts as a reviewer of different national and international journals. He is the Post graduate Examiner for MD and PhD of different universities of India. He has special training from Germany on rational use of drug. He has delivered different memorial lectures by different organisations both national and international level. He is the receipient of gold and silver medals from different academic societies. He is a member of National and International Academic Society. He was awarded as best Medical teacher by Governor of West Bengal. He was felicitated by Government of WestBengal on Dr. B.C Roy birthday celebration. He is also recognised as eminent teacher by different organisations. He is a well known social worker too.
Dr. P.V. Salimath did MSc in Biochemistry from Karnataka University, Dharwad in 1977 & Ph.D in Biochemistry, from CFTRI in 1981. Since his Ph.D days, he is in Mysore. Dr. Salimath had a distinguished career at CFTRI. He served as Chief Scientist for nearly 10 years & was #2 in CFTRI for a long time & has served as Head of the Dept of Biochemistry & Nutrition for over 6 years & in Director’s S&T unit for 1 year. He has guided 14 students for Ph.D degree & couple of them are presently working under his guidance. He has published more than 100 papers in international journals. He worked at Max Planck Institute for Immunobiology, Freiburg, Germany for more than 2 years between 1981 to 1983. He has also worked as Research Associate at Harvard Medical School, Boston, USA for 1 year during 1992 and at La Jolla Research Foundation, La Jolla, CA, USA for one more year during 1993. Besides he had stint at Cambridge & Norwich in United Kingdom. In CFTRI he has contributed significantly to the Area of Food Carbohydrates in relation to their functionality in Foods & beneficial effect of Foods during Diabetes & Diabetic nephropathy. These studies have added up to understanding of Biochemistry of Diabetic Nephropathy besides the beneficial effect on diabetic status. His researches were funded by DST and DAE and was PI of Net work project of CSIR. He has served as subject Expert committee member in DST, DBT & ICMR. He has served in almost all the committees of CFTRI & has also served in 12 th Five year plan projects of CSIR. For his outstanding contributions he is honored with Fellowship of AFST(I), Best scientist Award of CFTRI, Lucid hydrocolloid Award of ACCT(I), only to name some of them. For his contributions, recently in Dec 2014 he is honored with “Life Time Achievement Award” by ACCT(I). Since Jan 2015, he is working as Director (Research) in JSS Medical College, Mysore to explore the possibilities of Medical Research by improving quality of Publications and Research Grants.

Prof. Jagdish Rai was born on January 3, 1948 in village Khajura, district Ghazipur, Uttar Pradesh. He earned his Ph.D degree from Banaras Hindu University in 1974 and went to Germany as an Alexander von Humboldt Fellow. After returning back from Germany he joined Indian Institute of Technology Roorkee (then the University of Roorkee) in March 1979. Getting leave from IIT Roorkee he worked in USA and Canada and visited U.S.A. many times for short durations. On 15 July 2013 Prof. Rai joined Invertis University, Bareilly, U.P. as Vice Chancellor. As Vice Chancellor he
started some courses in science and engineering and initiated collaboration in the area of research and the exchange of students and faculty with two universities in U.S.A. Prof. Rai guided 20 students towards their Ph.D. degree. Two Ph.D. Students are presently working under his guidance. He has got 188 publications to his credit. In 2014 he got the Bharatmata award for his academic excellence.

At present the Senior-most Professor, has served the Department of Botany and Microbiology, Gurukul Kangri Vishwavidyalaya, Haridwar, as Professor for the past 25 years, since 1990 to continued, and Dean, Faculty of Life Science at the Gurukul Kangri University, Haridwar (1994 to 1996, 1998 to 2001 and 2004 to 2007). He is an active member of several scientific bodies of international repute and in the board of panels of various academic and administrative bodies, including member of Biodiversity board UCOST, Convenor of Science Forum, UCOST and District coordinator UCOST, member-coordinator NAAC for various universities and colleges, currently member advisory committee for UGC-DRS programme of Kumaun University, Nainital and UGC-SAP-DRS programme of North Maharashtra University, Jalgaon.

In recognition of his scientific contribution he was awarded Prof. YS Murty Medal (1992) of the Indian Botanical Society, at the young age, and was entrusted with the task of the Chief Editor of the Journal of the Indian Botanical Society (1999-2002).

He has been actively associated with Indian Science Congress Association, as its Life Member (since 1988), regular participant, and invited speaker, and was awarded with the prestigious Platinum Jubilee Lecture award (2012).

He has been a visiting faculty at several International organization, including UNESCO’s ITC fellow at the Biol. Res. Centre (Szeged), Hungary (1983-1984), Visiting Professor, Science University of Tokyo, Noda (Japan) in the year 1993 and 1998, and Guest Professor in the various universities including University of Ulm (Germany), University of Gent (Belgium), University of Barcelona (Spain), University of Tokyo (Japan), Deagu University (Korea), under various international Collaborative research programmes.

Prof. Maheshwari has 142 research papers and review articles in leading Journals two patents, one monograph entitled “Plant Growth and Health Promoting Bacteria” Springer, Heidelberg, Germany published in 2010, edited 07 volume series entitled Bacteria in Agrobiology: Crop ecosystem, Plant growth response, Plant nutrient management, Stress management, Plant Probiotics, Disease Management, Crop Productivity all published by Springer-Verlag, Heidelberg, Germany, and also edited 03 volume in the series entitled “Sustainable Development and Biodiversity”, guided 41 students for the award of Ph.D. degree, and successfully executed 14 Major Research Projects sponsored by UGC, CSIR, UPCST, MAPCOST, MNES, UCOST etc. and recently awarded UGC BSR support from UGC, New Delhi , submitted sequence of 82 bacterial strains in NCBI Gene Bank, four strains of *Rhizobia* in Microbial Type Culture Collection, IMTech. Chandigarh, India and two strains of *Sinorhizobium* in Japan Collection of Microorganism Wako, Japan.
Dr. Krishna Gopal Mandal is presently Principal Scientist (Agronomy) at the ICAR-Indian Institute of Water Management (IIWM), Bhubaneswar. Born in West Bengal in 1967; educated at Bishnupur High School; B.Sc. (Ag) Hons. with 1st Class First & M.Sc. (Ag) 1st Class First, Faculty Topper from Institute of Agriculture, Visva-Bharati, Sriniketan 1987-91 & 1991-93; Ph.D. in Agronomy from BCKV, West Bengal 1994-1997; Post-Doctoral from CAU at Beijing 2005-06. Dr. Mandal started his research career as ARS Scientist 1998-02, then Scientist-SS 2002-07 at ICAR-IISS, Bhopal. Since 2007, he is engaged in research and training as Sr. and Pr. Scientist at the present institute.

He has more than 17 years of research experience in ICAR on soil & plant nutrient management, irrigation, watershed management, conservation tillage and energy management, canal water management in about 16 institutional/ inter-institutional, 7 external funded (ADB through ICRISAT, World Bank through ICAR, MoWR, GoI and ICAR National Fund) projects as Principal Investigator and/ or Co-PI. Dr. Mandal has significant contribution in integrated nutrient management, water x nutrient interactions, water production functions, energy efficiency, crop diversification, broad-bed and furrow system, conservation tillage, water stress mitigation, plant nutrient starvation, irrigation water management, soil organic carbon & pedotransfer functions, aerobic rice, on-farm and participatory water management and integrated farming. Dr. Mandal is also involved in guiding students for thesis work and training at the present institute. He was the Coordinator/ Convener and resource person for several Farmers' and Trainers' Training Programmes on agricultural water management. He is also involved as a resource person for several model training & short courses, summer & winter schools, dissemination of technologies through exhibition and farmers' fair at the State and Central level.

Dr. Mandal has very good publications with 62 research papers (32 international, 30 national), 21 papers with NAAS rating ≥7.5, books/book chapters 16, technical bulletin manual/ popular article 13, proceedings and others 60, having 1017 Google Scholar citations with H-index 15 & i10 index 20, RG score >33. Based on proficiency in studies and significant research contribution Dr. Mandal has received National Scholarship of the GoI, S.J. Jindal Trust Scholarship, Dr. Amitava Mukhopadhyay Memorial Gold Medal Award, Hon'ble Prime Minister's Invitation as Topper, Tapan Memorial Award 1991 & 1993; Univ. Res. Fellow of BCKV; ICRISAT SRF; CSC Chinese Govt. Scholarship 2005-06; Doreen Mashler Award 2006 of ICRISAT; DWM (ICAR) Scientist Proficiency Award 2011; ISCA Sectional Member 2012-14. He is the Life Member of several professional societies and Editorial Board member of a few reputed journals.
Professor & Head of Zoology, MRM College, Darbhanga has worked on different aspects of Fish Biology and Environmental Science. She has published over 45 research papers in reputed journals and supervised four Ph. D. students. She has worked as Principal Investigator of UGC funded research projects. She is Member/Life Member and Fellow of many professional bodies and recipient of many honours/awards including ZSI Gold Medal. She has the honour to Cochair many seminars/symposia. Her research articles have been cited in many books.

Dr. Rakesh K. Srivastava (born Feb. 15, 1953) is presently Head, Department of Psychology, Post-Graduate College, Malikpura, Ghazipur (U.P.) of the V.B.S. Purvanchal University since 1979. He earned his M.A. (1973) and Ph.D. degree in Psychology (1979) from Kanpur University, Kanpur. Earlier he served in research projects at I.I.T. Kanpur and I.I.M. Ahmedabad and teaching and research assignments at P.P.N. College, Kanpur. Dr. Srivastava has contributed more than 50 scholarly articles in Indian and foreign journals including Journal of Social Psychology (U.S.A.) and British Journal of Projective Psychology (U.K.). He has published seven book chapters, two books reviews, two test adaptations and also completed three research projects funded by the University Grants Commission. His book Tribal ego-identity in India (1996) has been published by the Classical Publishing Company, New Delhi. He is also supervising Ph.D. level research in Psychology. He has done extensive research on tribals particularly on Ethnic Psychology of Tharu tribals. He is currently working in the areas of Psychology of acculturation, Ethnic Socialization. Empowerment of tribals, Cross-cultural issues in human development and Indigenization of psychology in India.

He is a member of several Indian and foreign professional associations. He was also a member of International Council of Psychologists, U.S.A. (1981-82). He was an organizing Committee member of 1st convention of Uttar Pradesh Psychology Association (1977), Founder member and Joint Secretary of Community Psychology Association of India (1988-2001), Executive member of Praachi Psycho-cultural Research Association (2001-05), and Executive member of Indian Psychological Association (1993-94). He has been an Executive member of Uttar Pradesh Psychology Association since 1995 and also a member of Research Board of Advisors (since 2000) of the American Biographical Institute (U.S.A.). He has been nominated as one of the members of the 27 member international operational group of the World Association of Cultural Psychiatry (WACP). He is awarded IPERA Prof. M.A. Hakim Memorial award for the best Applied Psychologist (2013) at 1st IPERA International Conference and also awarded Indian Psychological Association President's Gold Medal and certificate for excellence in Psychology (2014). He was an Associate Editor of Purvanchal Journal of Social Sciences (1993-94). He has attended more than 75 National and International conferences.

Dr. Srivastava is a regular participant of Indian Science Congress sessions and attended 33 Indian sessions. He was an elected Sectional committee
member of Section of Psychology & Educational Sciences (82nd Session, 1994-95) and Section of Anthropological & Behavioral Sciences (90th session, 2002-03 & 95th session, 2007-08). He has also served as Chairperson /Rapporteaur at different conferences. Presently he is the member of the editorial boards of several journals. He has visited various Universities of Singapore, Malaysia (2008) and the United States of America (2013 & 2014).

Dr. Ranjana Aggarwal (September 20, 1967) Professor, Department of Chemistry, Kurukshetra University Kurukshetra obtained her M.Sc. (with distinction, 1988) and Ph.D. (1992) from Kurukshetra University. In 1992, she visited Cambridge University, UK as a post doctoral fellow where she worked in the area of biosynthesis of erythromycin with Prof James Staunton, FRS. Subsequently, she joined Kurukshetra University as a faculty in 1995 and is actively engaged in teaching and research with more than 20 years of experience. Dr. Aggarwal was awarded Commonwealth Fellowship in 2003 to work again at Cambridge University in Dr. Spencer’s group on enantioselective synthesis of aminolactones. She was a visiting fellow at Trieste University, Italy and worked on antibody catalysis. Her research work is mainly focused on developing green synthetic methodologies for regioselective synthesis of heterocycles of natural and synthetic origins. Commonly employed methodologies involve: mechanochemistry, multicomponent reactions and eco-friendly hypervalent iodine reagents. The bioactive azole compounds have been identified as selective antitumor compounds acting as photonucleases, minor groove binders and caspase inhibitors. 2D NMR spectroscopy and computational modelling are being explored to assign isomers of fluorinated and non-fluorinated compounds without any ambiguity.

She has completed five major research projects till now. Recently, she was awarded an International collaborative research project on development of anticancer agents under India Ireland Cooperative Science Programme by DST, New Delhi and Trinity College Dublin, Ireland. So far, eight students have obtained their Ph.D. degree under her supervision. She has published more than eighty research papers in the National and International journal with high impact factor. She has delivered many invited talks and plenary lectures at various conferences and Institutes/Universities both in India and abroad. Besides chemistry as her academic discipline, Dr. Aggarwal is actively engaged in issues related to women empowerment. She is a resource person and Master trainer for Sensitization, Awareness and Motivation (SAM) programme for Women in Higher Education, a drive of UGC, initiated by Prof. Armity Desai, former Chairperson UGC. She is Member and Councillor of Gender Sensitization Committee against Sexual Harassment at workplace of Kurukshetra University and other state Universities.
Born in the year 1966, Prof Srivastava has obtained his Ph.D. degree in Applied Geology from Indian School of Mines Dhanbad in the year 1991. At present he is working as Professor of Economic Geology and Dean Students Welfare in the University of Jammu. Prof Srivastava has served different organizations like Wadia Institute of Himalayan Geology, Dehradun, and University of Rajasthan, Jaipur in different capacities before finally joining University of Jammu. He has more than 22 years of Teaching and Research experience in the field of Ore Geology, Mineral Exploration, Mining Geology, Fluid Inclusions and Geochemistry.

The main area of his research work involves genesis of hydrothermal mineral deposits with the help of fluid inclusion and geochemical techniques. Tungsten and rare metal deposits associated with acid magmatism are of special interest to me. Apart from this the gold deposits of Mahakoshal belt, gem bearing pegmatites, fluorite deposits of Rajasthan, and carbonate hosted Pb-Zn and Himalayan magnesite deposits have also been studied particularly with reference to evolution of ore bearing fluids and genesis of these deposits. Five research projects and a number of technical consultancies have been completed till date.

He has 45 refereed publications in scientific International and National journals and 4 edited books. He has presented more than 75 papers presented in different international and national seminars.

Dr. Srivastava is DAAD Fellow and has received a number of fellowships from different organizations. He was the Convener of Children Science Congress in the 101st session of the Indian Science Congress held at Jammu in 2014.

Dr. Tapas Laha presently holds the position of assistant professor in the Department of Metallurgical & Materials Engineering at Indian Institute of Technology Kharagpur. Born on July 07, 1978, Dr. Laha obtained his B.E. degree from Indian Institute of Engineering Science and Technology (IEST), Shibpur (formerly Bengal Engineering College) in 1999 and M. Tech. from IIT Kanpur in 2002. Dr. Laha received his Ph.D. in 2006 from Florida International University (FIU), Miami, USA in the area of nano-fiber reinforced metallic nanocomposites. As a young researcher, Dr. Laha is currently involved in synthesis/development and mechanics of carbon nanotube reinforced bulk metallic nanocomposites for structure application. The processing routes being adopted for the the
synthesis of these nanocomposites are thermal spraying, spark plasma sintering (SPS) and microwave sintering (MWS). Dr. Laha is trying to address the very significant and fundamental issues of “interface engineering of CNT” to promote bonding between CNT reinforcement and metal matrix in his work. Another research area, which Dr. Laha is exploring presently, is synthesis of Al based bulk metallic glass nanocomposite (BMG-NC) via mechanical allying and spark plasma sintering (SPS). In this work, Dr. Laha is focusing to improve the ductility and fracture toughness of intrinsically brittle Al based BMGs by reinforcing this material with ductile crystalline reinforcement. Dr. Laha is also working in the area of surface engineering and coating, where investigating the tribological behaviour and interfacial phenomena in layered nanocomposite is the primary focus. He is involved in an industrial problem of steel-rubber interfacial adhesion improvement, addressed this issue by developing a novel multi-layer Cu-Sn coating strategy and published 5 technical papers in peer-reviewed international journals based on this work. Dr. Laha has published total 36 research papers in peer-reviewed journal and conference proceedings and presented around 40 technical talks in national and international conferences based on his research work. He has received the “IEI Young Engineers Award 2010-2011”, in Metallurgical & Materials Engineering discipline, given by the Institution of Engineers, India. He was also awarded “The Outstanding Ph.D. Graduate, Fall 2006” from College of Engineering and Computing, Florida International University after completion of his Ph.D. degree. Dr. Laha is involved with review work in various international journals and was selected twice as the “Top 20% reviewer” by Metallurgical & Materials Transactions. Dr. Laha is active member in various professional societies.

Maitree Gopal Tiwari was born on 15th December, 1982 in Deoghar, Jharkhand. She completed her B.Sc. (Botany Hons.) from SKM University, Dumka, Jharkhand. Later on she did her M.Sc. and B.Ed. from Visva-Bharati University, Santiniketan, West Bengal. She pursued her M. Phil degree at Rani Durgawati University, Jabalpur, Madhya Pradesh and was an integral part of the Mycological Research laboratory. She conducted her research in Plant breeding and Genetics in Horticulture from Oregon State University, Corvallis, OR, USA.

She has research experience in diverse fields of Life Sciences and extremely motivated towards recent developments in this area. For her master's degree, she chose environmental biology and pollution with special focus on "Jatropha for Biodiesel Production." Based on the results obtained by growing the shrub on different types of soils, it was established that Jatropha could be cultivated on the dry barren wastelands without the use of fertilizers. This could solve the shortage of fossil fuel issue as well as address the worsening pollution situation in India. For her M.Phil project, she worked on, "Gelatin Zymography as a criterion in identification of Chrysosporium species." For the
first time, Gelatin Zymography was used to identify species of *Chrysosporium*. She has several publications in different national journals and conference proceedings. After qualifying GRE and TOEFL, she went to USA for higher studies. There, she joined the graduate program in Horticulture Department at Oregon State University (OSU), Corvallis. She was working on Genetic Mapping for resistance to root rot disease in snap beans under vegetable breeding program. She has strong inclination towards nature and believes sustainable agricultural and human development. In her future research, she wants to apply new techniques of molecular biology in ecological studies.

**PROF. ARUN D. GANGARDE**
**Recorder**
**Section of Information and Communication Science & Technology (including Computer Sciences)**

Prof. Arun Gangarde, MCS, MCM, MBA from Pune university. At Present Working as Chairman, Board of Studies in Animation, University of Pune and working as a Associate Professor & Head, Postgraduate Department of MCA New Arts, Commerce & Science College, Ahmednagar (M.S.). He has contributed as an Expert, Observer, Convener in various committees of university. He is member of Board of Studies, Research Committee & Academic Council of Pune University and worked as External Evaluator and / or Visiting Faculty of many colleges, Universities & Institutes, participated in Designing & Implementation of Computer & IT related course curriculum for various Universities & Institutes, conducted many development programs for the students of different faculties in affiliated colleges, organized and / or participated in National & International Conferences and Seminars, presided Technical sessions and delivered lectures in them.

Worked as Co-ordinator for National Conference & faculty development program at college level. Joint Secretary of Yashwantrao Chavan Vyasaheeth, (Public Trust) at Ahmednagar engaged in social & educational reforms. Life member of various Professional & Technical societies. Being a professional in computer science and Information Technology Since last 24 years, he has worked in various application areas of the related field in terms of research, consultancy and Project Development. About 24 years of Experience in Teaching, Training and Research in the field of Computer Science & Information Technology. Pioneer in Animation degree in Pune university Education by introducing B.Sc. (Animation) course under faculty of science, the 1st under graduate level Education in the state of Maharashtra.

**DR. ASHISH KUMAR**
**Recorder**
**Section of Materials Science**

Dr. Ashish Kumar obtained his M.Sc. Degree in
1995. After qualifying CSIR-UGC NET in 1999, he was awarded PhD in 2004 for his thesis on river water pollution. He started his teaching career in 1997. Since 2003 he is working as asst. Prof. Chemistry in Agra College (one of the oldest educational institutions in India established in 1823). His research interests include various aspects of water pollution. He has presented numerous papers at various national and international conferences. He has several research papers in national and international journals to his credit. In 2007, he visited University of California, Santa Barbara among other places in U.S.A. as the member of Group Study Exchange team.

This year he was selected for Netherlands Fellowship Programme. Under this he was awarded scholarship to attend a course on water quality assessment at UNESCO-IHE (The Netherlands), which is one of the world's best institutions on water education. He is the only candidate selected for this prestigious scholarship for this course from India this year. Apart from above he has visited several countries in four continents.

Dr. Rashmi Verma did her B.Sc.(Hons.) in Mathematics, M.Sc. in Mathematics, M.Phil. in Mathematics and Ph.D. in Mathematics from University of Delhi in 1999, 2002, 2004 and 2010 respectively. She has to her credit several research papers published in national and international journals. Her research interest is in Algebraic Coding Theory. She is recipient of Shri Suresh Bhatia Memorial Gold Medal (1999), Rai Bahadur Brijmohan Lal Saheb Memorial Gold Medal (1999) and Dr. J.N. Mitra Memorial Prize (1999) for being the best candidate in B.Sc.(Hons.) in Mathematics. She was shortlisted for Young Scientist Award in the Section of Mathematical Sciences (including Statistics) of 96th Indian Science Congress 2008 - 2009. She has been a member of the Jury of INSPIRE AWARD (DST program) at National Level Exhibition and Project Competition (NLEPC) held in 2012 and 2013 at New Delhi. She has participated in several national and international conferences/seminars. She is currently an Assistant Professor in the Department of Mathematics at Mata Sundri College for Women (University of Delhi).

Dr. Samir Kumar Sil, did his B.Sc. (M.B.B.College, Agartala) and M.Sc. in Physiology from University of Calcutta. He did M.Sc. in the year 1988 with first class third position and qualified CSIR/UGC NET in 1989. He carried out his Ph.D. in the Department of Human Genetics, Indian
Statistical Institute, Kolkata on Haemoglobin related genetic disorder and Genomic analysis. Using autosomal and mitochondrial polymorphic DNA markers Dr. Sil deciphered the origin of tribal population of Tripura from genetic point of view. Afterwards, he visited Tulane University, USA, to work on Haemoglobin E, haemoglobinopathy predominantly found in northeastern populations, and malaria. He joined Tripura University in 1995 and at present he is the Head of the Department of Human Physiology, Tripura University. His research interest revolves around genetic polymorphism and disease susceptibility. Analyzing the sequence of HbV genome, their group has identified a new subtype of HBV circulating in the population of Tripura, with clinical implications. His group is also carrying out molecular typing of HPV in cervical cancer patients of Tripura and to decipher the association of host factors with the disease, genome wide association study in respect to different stages of cervical cancer is also being carried out. Another interest of his group is to assess anti-cancer, immunomodulatory and wound healing activity of molecules from natural sources especially from medicinal plants at molecular and cellular level. Using different cell lines (in-vitro) and in-vivo mouse models two endogenous medicinal plants, *P. Javanica* and *E. nummularius*, have been identified to possess anti cancer activity and were found to induce apoptosis in cancer cells involving mitochondria. Up or down deregulation of components of signal pathways in drug induced fibroblast proliferation is of active interest. Dr. Sil is a member of different academic bodies and scientific organizations. He is recipient of many honours, awards and fellowships including ICMR Young Biomedical Scientist award and Overseas Associateship by Department of Biotechnology, Govt. of India. He has published his findings in national and international journals.

Dr. Partha Pratim Bose got his Ph.D in Chemistry from Jadavpur University, Kolkata (2007). He had worked in various renowned universities and institutes like Uppsala University, Karolinska Institute, Sweden; European Institute of Chemistry and Biology, France as post doctoral researcher. In his current assignment, he works as assistant professor in the Department of Biotechnology, National Institute of Pharmaceutical Education and Research, Hajipur. His current research interest is the development of point of care diagnostic platform based on nanotechnological approach.

Prof. Manisha Gupta, born on Jan 6, 1966,
received her college to university education in Lucknow. She obtained her graduate, master's and doctorate degree in 1983, 1985 and 1990 respectively from the University of Lucknow, Lucknow. Prof. Gupta joined the department of Physics as Lecturer in 1990 and rose to the position of Professor in 2007. Prof. Gupta started her research career as JRF (UGC) in 1985 in the department of Physics, University of Lucknow, Lucknow. She has over 25 years research and teaching experience. Her field of research specialization is electrical, acoustical and spectroscopic studies of materials especially industrially important polymers. Prof. Gupta has vast experience of teaching and research having guided 12 students for Ph.D. and evaluated doctoral work of many Ph.D. scholars. She has also supervised several Master's students for their project work. She has national collaboration as well as inter departmental collaboration within the University. Prof. Gupta has more than 100 research papers to her credit in various National and International peer reviewed journals. She is also reviewer of a number of high impact International journals. She has edited several books/proceedings. She has participated in various National and International conferences and chaired various technical sessions and delivered many invited talks. She has also presented papers in Paris (France) and Dubai (UAE). She has successfully completed major research project. She has received Best Poster presentation award in the section of Physics at 90th Indian Science Congress, Jan 2003. She had also served several times as sectional committee member in then Physics / Physical Science section. Prof. Gupta has also administrative experience as Proctor-in-Charge, Additional Proctor, Coordinator, Treasurer, member of several committees in the University. She has been on the selection Committee for appointments in several Universities. She is Life member of various National Scientific bodies.

Professor (Mrs.) Seshu Lavania M.Sc., M.Phil., Ph.D., MNASc, FBS, FLS (London) did her M.Sc., M.Phil. and Ph.D. from Institute of Advanced Studies, Meerut University, Meerut. She joined NBRI, Lucknow for her CSIR Post Doctoral Fellowship. Later in 1985 she joined as regular faculty in the department of Botany at Lucknow University, Lucknow. She has 35 years of research experience and published 37 research papers in Indexed Journals and one US Patent. She made significant contributions in the area of floral / vegetative morphology and polyploidy of plants from phenomics and developmental biology angle. Her notable contributions are: (i) identification of an intermediary unique form of axio-parietal placentation in Solanum grandiflorum providing unique link vis-à-vis placental specialization, (ii) elucidation of evolutionary significance of trichomes in delineating speciation and microtaxonomic characterization, (iii) experimental strategy for elicitation of bud-sport formation for mining of de novo diversity, (iv) development of root ideotype concept for vetiver for its dual utilization for industrial and environmental applications, including root-anatomy bioassay, (v) proposition of 'vetiver
grass model' for carbon sequestration in sub-soil horizon, (vi) demonstration of 'polyploid model' for fixation of heterozygosity, and (vii) pinpointing that native secondary metabolites in progenitor diploids have decisive bearing on growth behavior in the derived autopolyploids in grasses (Cymbopogon Sp.). She is a recipient of Woman Scientist Medal of Indian Botanical Society, King of Thailand Vetiver Award Certificate of Excellence and Vetiver Network International Certificate of Excellence.
Govt. College of Engineering and Research has been established in August 2009 by Government of Maharashtra. This is the only Government College of Engineering affiliated to Pune University. "Government College of Engineering Pune," has now become an Autonomous Institute since 2004-05, and is now known as "College of Engineering Pune". Therefore, there was a need to establish a separate Government Engineering College in Pune University. This need is recognized by Government of Maharashtra and as a result a state "Government Engineering College is started at Avasari Khurd, Tal. Ambegaon, Dist. Pune".

The college offers six under graduates programs in Engineering, namely
1) Mechanical Engineering,
2) Automobile Engineering,
3) Computer Engineering and
4) Electronics and Tele Communication Engineering
5) Civil Engineering
6) Instrumentation and Control Engineering with a sanctioned intake of 60 for each program.

The college campus is located at 3 km from Manchar, which is located at about 65 km from Pune, on Pune - Nashik highway. A land admeasuring 20.43 hectare (about 50 acre) has been acquired for the college. The college is approved by All India Council for Technical Education New Delhi and is affiliated to Pune University.

Facilities

The college has two Boys Hostel buildings and one Girls Hostel building each having 180 capacity with a separate dining hall. Both hostels are provided with recreation and gymnasium facility. Admissions to the hostel are given strictly on merit. Out of the total seats available, seats are divided amongst the First, Second and Third year students. Hostel fee is charged as per prevailing Government Rules. At present, hostel fees stipulated by the Government is Rs. 550/- per year.

The college has a library having about 17500 books and a separate reading room of 100 seating capacity. The college has very good internet connectivity with 2 connections of 2 Mbps of Reliance RF, one
connection of 4 Mbps of Reliance RF and one leased line connection of 4 Mbps of BSNL. Electric power supply to the college is through express feeder, and hence there are no power cuts.

**Contact:** Principal
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International Symposium on Computational Science 2015, 12-15 December 2015, Andhra Pradesh

Topics:
- Computational Science
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- Education Technology
- Internet of Things & Internet of Everything
- Big Data and Data Science
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- Signal and Image Processing
- Computer Vision and Pattern Recognition
- Artificial Intelligence
- Parallel and Distributed Computing
- Mobile Computing
- Wireless Networks, and Security
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- Information Security and Digital Forensics
- Computational Drug Design
- Computational Bio Informatics
- Systems Biology
- Computational Molecular Modelling
- Computational Epidemiology
- Computational Neuroscience
- Computational Cardiology
- Computational Fluid Dynamics
- Computational Materials
- Molecular computing
- Social Network Analysis
- Neuromorphic Modelling
- Computational Linguistics
- Computational History

Contact:
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Topics:
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- Wavelet Methods for Problems of Engineering and Science including Medical Science and Social Science.
- Inverse Problems, Time Series Analysis, Data Mining.

Contact:
Prof. A. H. Siddiqi (Convener), School of Basic Sciences & Research, Sharda University, Knowledge Park-III, Greater Noida – 201 306, Email : siddiqiconference@gmail.com, Mobile No. +91-98710-69944.
6th IEEE International Advance Computing Conference (IACC-2016), February 27-28, 2016, Andhra Pradesh

Topics:
- High Performance Computing
- Advances in Communication and Networks
- Advanced Algorithms
- Image & Multimedia Processing
- Databases and Data Management
- Teaching & Learning Systems

Contact:
Dr. M S V S Bhadri Raju, Department of Computer Science and Engineering, S R K R Engineering College, Bhimavaram, Andhra Pradesh -534204, Phone : +91-9848433131 Email: drmsramaraju@gmail.com.

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- Advanced Applications of Ion Beams for Materials Science
- Stretchable and Wearable Electronics
- Advances in Smart Energy Storage for a Sustainable Energy Future – Electrochemistry, Mechanics and Applications
- Ferroelectric, Piezoelectric and Multiferroic Materials and Devices
- Topological Insulators
- Organic Electronics
- Optical Materials and Devices
- Materials by Theoretical/Computational Design

Contact:
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XXV (25th) International Congress of Entomology, ICE 2016, September 25-30, 2016, Orlando, Florida, USA

Theme:
“Entomology without Borders” will emphasize the global impact of entomology along with a multidisciplinary approach to explore and expand our scientific frontiers.

Contact:
For detail information please link to: www.ice2016orlando.org
METHANE EMISSIONS FROM ARCTIC TUNDRA INCREASE WHEN SEA ICE MELTS, ACCORDING TO A NEW STUDY FROM LUND UNIVERSITY IN SWEDEN. THIS CONNECTION HAS BEEN SUSPECTED BEFORE, BUT HAS LACKED STRONG EVIDENCE UNTIL NOW. "CHANGES IN THE ARCTIC OCEAN CAN AFFECT ECOSYSTEMS LOCATED FAR AWAY ON LAND," SAYS DR. FRANS-JAN PARMENTIER, THE STUDY'S LEAD AUTHOR AND RESEARCHER AT THE DEPARTMENT OF PHYSICAL GEOGRAPHY AND ECOSYSTEM SCIENCE, LUND UNIVERSITY.

Bright sea ice reflects most sunlight, while open water absorbs most sunlight. Less sea ice, therefore, leads to more absorbed heat, and higher temperatures throughout the North Pole region. This stimulates the production of methane by microorganisms in permafrost soils, which also drives the change towards a warmer climate. "While numerous studies have shown the effects of sea ice loss on the ocean, there are only a few that show how this oceanic change affects ecosystems on the surrounding land. Our research shows that to understand the impact of climate change on the Arctic, the ocean and land cannot be viewed separately," Frans-Jan Parmentier explains.

Dr. Parmentier, together with researchers from the United States and the Netherlands, explored the connection between methane emissions and loss of sea ice by using advanced computer models. Models can simulate how methane emissions respond to the effects of sea ice decline, such as higher temperatures and altered rainfall. "Sea ice decline is one of the most visible consequences of climate change, and has a tremendous impact on the Arctic climate. Since the 1990's, the Arctic has been losing sea ice at a tremendous rate -- about 14 percent per decade. The expectation is that with further sea ice decline, temperatures in the Arctic will continue to rise, and so will methane emissions from northern wetlands," says Frans-Jan Parmentier.

The next step is to assess the extent of sea ice's influence on methane emissions by measurements in the field. The results of this research could improve predictions of how climate change affects our planet. Source: http://www.sciencedaily.com/releases/2015/09/150917091306.htm

SEQUENCING OF BARLEY GENOME ACHIEVES NEW MILESTONE

Barley, a widely grown cereal grain commonly used to make beer and other alcoholic beverages, possesses a large and highly repetitive genome that is difficult to fully sequence. Now a team led by scientists at the University of California, Riverside has reached a new milestone in its work, begun in 2000, on sequencing the barley genome. The researchers have sequenced large portions of the genome that together contain nearly two-thirds of all barley genes.

The new information, published in The Plant Journal, will not only expand geneticists' knowledge of barley's DNA but will also help in the understanding, at the genetic level, of wheat and other sources of food. It also has applications in plant breeding by increasing the precision of markers for traits such as malting quality or stem rust. "What we have now is much finer resolution of genetic information throughout the barley genome," said Timothy J. Close, a professor of genetics at UC Riverside and the corresponding author on the research paper. "This is an improved resource used throughout the world. Prior to this work, a long-held view was that the distribution of genes in the genomes of barley, wheat and their relatives is such that the gene-dense regions are only out near the ends of chromosomes where there is also a high rate of recombination. Our work revealed clear exceptions, identifying deviant regions that are gene-rich but low recombination."

Recombination refers to the formation of new combinations of genes naturally during meiosis, which is a stage of the cell cycle where chromosomes pair up and undergo exchange. Close explained that plant breeders rely on meiotic recombination to
introduce favorable forms of genes for malting quality, stem rust or any number of traits into cultivated varieties. Crosses are made and progeny plants are screened for desirable new combinations of traits. When a favorable form of a gene (allele) lies within a gene-dense, low recombination region it requires much more work to bring that favorable allele into an existing variety without also dragging in neighboring genes that may exist in undesirable forms. "For example, a breeder might succeed in adding a favorable allele for stem rust resistance from a wild barley, but along with that gene drag along another gene that causes shattering of the mature head," Close said. "Now the breeder would have a stem rust resistant plant, but the seeds would all fall to the ground rather than remain on the plant until harvest. So, if a gene lies within a gene-dense, low-recombination region, then this means that a much larger number of progeny from crosses must be examined to find those that derive from rare recombinational events that separate the desired new allele from undesirable forms of neighboring genes. Knowing the location of gene-dense low-recombination regions helps with decisions about which genes to pursue for variety improvement."

Close teamed up with Stefano Lonardi, a professor of computer science and engineering at UCR, to develop a set of efficient computational innovations that helped further sequence the barley genome. The new algorithms could handle large datasets, allowing the researchers to gain more progress than would otherwise be possible. "Tim and I were able to work very closely in all the steps of the project from the experimental design in the wet lab to the final analysis of the results; the major challenge was how to handle the very large number of barley samples and for this we designed a novel approach to sequencing that exploited deep results in combinatorics," Lonardi said.

The work is the outcome of a partnership between the College of Natural and Agricultural Sciences and the Bourns College of Engineering at UCR that has flourished for more than ten years with continuous grant support from the U.S. Department of Agriculture and the National Science Foundation, focused largely on innovations in bioinformatics.

"The partnership has provided an environment in which students, post-docs and others have highly productive experience and training in genomics," Close said.

Key innovations on the computational side are:

- the amount of genome sequences the researchers released is about four times the size of the entire rice genome.
- the work took advantage of two very substantial algorithm innovations that Close and Lonardi published with their students in the past year: one a new computational invention to make better use of today's high-volume sequence data; the other a very efficient method of classifying sequences into specific groups
- the new information has been integrated into a national wheat/barley project (TriticeaeCAP) and has been shared with the International Barley Sequencing Consortium
- the new information enabled the researchers to clarify aspects of the barley genome that are important in the context of genome evolution and for practical use of genome knowledge by plant breeders and basic researchers--namely, the locations of gene-rich regions including some that have low recombination.

"When breeders make crosses to develop new varieties, they are seeking new combinations of alleles that are better suited to the agricultural environment or market for the crop product," Close explained. "Often this means making crosses with somewhat distant individuals, which may carry unfavorable alleles at many positions in the genome. When a breeder can cross in only the favorable alleles, then that is beneficial. "If unfavorable alleles of neighboring genes always are carried in with the favorable alleles of the targeted genes, then that is not useful," he added. "When a favorable allele lies within a region in which recombination seldom breaks the linkage to a bad allele for a neighboring
gene, the breeder will have to work much harder with a larger population to find the rare individuals with the right combinations. By pinpointing which regions of the barley genome are resistant to recombination, breeders will be able to make better informed decisions about which favorable alleles to pursue, and to plan more efficiently.”

About two decades ago, Close was working nearly exclusively on dehydrins—a family of proteins that all plants make in response to drought stress or low temperature. By 2000, his research group knew that there are at least 13 dehydrin genes in barley, and Close wanted to study them all. “Genome resources for barley were not adequate, and, fortunately, I had the appropriate type of training to help develop the basic genome resources,” he said. “So one thing led to another for me, and for my colleagues at UCR, who became engaged in the barley trek. Now we have completed the last genome resource task that we took on, and there are still a few years left to look again at dehydrin genes of barley. What Close and his colleagues learned by working with barley has been easy to transfer to cowpea. The research group is now very engaged in cowpea research, which has a 40 year history at UCR. “We lead an international effort to enhance cowpea breeding efforts, targeting many traits,” Close said. “As for barley, the dehydrin genes seem to be very plastic, some of them changing at a high frequency over generations, and we intend to look into this plasticity in more detail now that we have the genome knowledge that we lacked before.

To gain access to the gene-containing portion of the barley genome at high resolution, Close and his team identified and sequenced 15,622 BACs or bacterial artificial chromosomes—small fragments of the barley DNA linked to other DNA to constitute a circular molecule that can replicate and be propagated inside an *E. coli* bacterial cell, enabling researchers to produce copies of each BAC for DNA sequencing one small piece of the barley genome at a time. Exploring these sequenced BACs that contain an estimated two-thirds of all barley genes, Close and his team found that gene-rich areas are not found only in high combination regions. “There are gene-rich regions that are in low recombination regions, which is critically important for plant breeding,” Close said. Because barley is a close relative to wheat, the new work could offer useful information leading to the complete sequencing of the wheat genome.

Source: http://www.sciencedaily.com/releases/2015/08/15082514313.htm

ALTERING GENES WITH THE AID OF LIGHT

Scientists have been manipulating genes for a while. The University of Pittsburgh’s Alexander Deiters just found a way to control the process with higher precision, by using light. Deiters and his group are the first to achieve this. The resulting paper was recently published in the *Journal of the American Chemical Society*.

Since 2013, scientists have used a gene-editing tool called CRISPR/Cas9. The method employs a bacterially derived protein (Cas9) and a synthetic guide RNA to induce a double-strand break at a specific location in the genome. This enables excision of a gene, alteration of its function, or introduction of desired mutations.

In practice, the CRISPR (Clustered Regularly Interspaced Short Palindromic Repeats of DNA base sequences) method has shown tremendous promise to enable researchers to treat cystic fibrosis and sickle-cell anemia, create laboratory animals that mimic human disease, and create a strain of wheat resistant to powdery mildew. Deiters, professor of chemistry in Pitt’s Kenneth P. Dietrich School of Arts and Sciences, along with colleagues at the University of North Carolina at Chapel Hill, have, through a series of experiments, found a lysine residue (lysine is an amino acid) in Cas9 that can be replaced with a light-activated analog.

The approach developed by Deiters generates a Cas9 protein that is functionally inactive, so called "caged," until the cage is removed through
light exposure, activating the enzyme and thereby activating gene editing. "This method may allow people to engineer genes in cells or animals with better spatial and temporal control than ever before," Deiters says. "Previously, if you wanted to knock out a gene, you had limited control over where and when it would happen. Engineering a light switch into Cas9 provides a more precise editing tool. You can say, 'In this cell, at this time point, is where I want to modify the genome.'" The improved control over the time and location at which a gene will be manipulated, Deiters says, may help eliminate "off-target effects" and could potentially enable genetic studies with unprecedented resolution.

Source: http://www.sciencedaily.com/releases/2015/05/150508140342.htm

SPIRALS IN DUST AROUND YOUNG STARS MAY BETRAY PRESENCE OF MASSIVE PLANETS

A team of astronomers is proposing that huge spiral patterns seen around some newborn stars, merely a few million years old (about one percent our sun's age), may be evidence for the presence of giant unseen planets. This idea not only opens the door to a new method of planet detection, but also could offer a look into the early formative years of planet birth.

Though astronomers have cataloged thousands of planets orbiting other stars, the very earliest stages of planet formation are elusive because nascent planets are born and embedded inside vast, pancake-shaped disks of dust and gas encircling newborn stars, known as circumstellar disks.

The conclusion that planets may betray their presence by modifying circumstellar disks on large scales is based on detailed computer modeling of how gas-and-dust disks evolve around newborn stars, which was conducted by two NASA Hubble Fellows, Ruobing Dong of Lawrence Berkeley National Laboratory, and Zhaohuan Zhu of Princeton University. Their research was published in the Aug. 5 edition of The Astrophysical Journal Letters.

"It's difficult to see suspected planets inside a bright disk surrounding a young star. Based on this study, we are convinced that planets can gravitationally excite structures in the disk. So if you can identify features in a disk and convince yourself those features are created by an underlying planet that you cannot see, this would be a smoking gun of forming planets," Dong said.

Identifying large-scale features produced by planets offers another method of planet detection that is quite different from all other techniques presently used. This approach can help astronomers find currently-forming planets, and address when, how, and where planets form.

Gaps and rings seen in other circumstellar disks suggest invisible planets embedded in the disk. However gaps, presumably swept clean by a planet's gravity, often do not help show location of the planet. Also, because multiple planets together may open a single common gap, it's very challenging to estimate their number and masses.

Ground-based telescopes have photographed two large-scale spiral arms around two young stars, SAO 206462 and MWC 758. A few other nearby stars also show smaller spiral-like features. "How they are created has been a big mystery until now. Scientists had a hard time explaining these features," Dong said. If the disks were very massive, they would have enough self-gravity to become unstable and set up wave-like patterns. But the disks around SAO 206462 and MWC 758 are probably just a few percent of the central star's mass and therefore are not gravitationally unstable.

- The team generated computer simulations of the dynamics of a disk and how the star's radiation propagates through a disk with embedded planets. This modeling created spiral structures that very closely resemble observations. The mutual
Gravitational interaction between the disk and the planet creates regions where the density of gas and dust increases, like traffic backing up on a crowded expressway. The differential rotation of the disk around the star smears these over-dense regions into spiral waves. Although it had been speculated that planets can produce spiral arms, we now think we know how.

"Simulations also suggest that these spiral arms have rich information about the unseen planet, revealing not only its position but also its mass," Zhu said. The simulations show that if there were no planet present, the disk would look smooth. To make the grand-scale spiral arms seen in the SAO 206462 and MWC 758 systems, the unseen planet would have to be bulky, at least 10 times the mass of Jupiter, the largest planet in our solar system.

The first planet orbiting a normal star was identified in 1995. Thanks to ground-based telescopes and NASA’s Kepler mission, a few thousand exoplanets have been cataloged to date. But because the planets are in mature systems, many millions or a few billion years old, they offer little direct clues as to how they formed.

"There are many theories about how planets form but very little work based on direct observational evidence confirming these theories," Dong said. "If you see signs of a planet in a disk right now, it tells you when, where, and how planets form."

Astronomers will use the upcoming NASA James Webb Space Telescope to probe circumstellar disks and look for features, as simulated by the modeling, and will then try to directly observe the predicted planet causing the density waves.

Source: http://www.sciencedaily.com/releases/2015/10/151029185549.htm
सदस्यता की गति और सदस्यों की विवेशपाठिकार/Terms of Membership and Privileges of Members:

संस्था की सदस्यता उन सभी लोगों के लिए खुली हैं, जो स्नातक या उसके समान स्तर पर शैक्षणिक योग्यता अर्जन कर चुके हैं, और जिन्हें भारत में विज्ञान की तरफ से रूचि है।

Membership of the Association is open to person with Graduate or equivalent Academic Qualifications and interested in the advancement of Science in India.

1. वार्षिक सदस्य : जो व्यक्ति नये रूप से वार्षिक सदस्यता ग्रहण करना चाहता है उसे वार्षिक सदस्यता शुल्क र 200/- के साथ भीतरी शुल्क र 50/-* (विदेशियों के लिए** U.S. $ 70) मात्र देने पड़ेगे। वार्षिक सदस्यता शुल्क प्रत्येक वर्ष के 01 अप्रैल को देने हो जाएगा। जो भी 15 जुलाई के भीतर अपनी सदस्यता शुल्क नहीं देते तो उस साल के लिए अपना सदस्यता स्थानीय में व्यक्ति हो जाएगा और/या वह उस वर्ष के लिए संस्था के कार्यवाह की भी नियंत्रण नहीं कर पाएगा। वार्षिक सदस्य अपनी सदस्यता दोबारा अगले साल 15 जुलाई के भीतर बिना शुल्क दिए जितने: अपनी सदस्यता प्राप्त कर सकता है।

सदस्यता अपने पेपर कांस्ट सत्र के समय पेय कर सकते हैं। उन्हें वार्षिक विज्ञान कांस्ट सत्र की कार्यवाहन को एक प्रति विभाग मूल्य में भाग लेना हो सकता है। इसके साथ वे संस्था के रोजगार का “एवरीमेंट साइंस” को प्रति भी बिना फील्ड उस साल के लिए प्राप्त कर सकते हैं। सदस्यता के नवीकरण के लिए कृपयाISCA/वेबसाइट से फार्म डाउनलोड करें।

1. Annual Member : A person willing to be enrolled as new Annual Member has to pay an annual subscription of ₹ 200/- along with an admission fee of ₹ 50/-* (for foreign ** U.S.$ 70) only. The annual subscription of a Member shall become due on the 1st April of each year. Anyone who fails to pay the subscription on or before the 15th July in any year shall lose the right of voting and/or holding any office of the Association for that year. A member failing to pay the annual subscription by the end of March of the following year shall cease to be a Member. Annual members can renew their Membership without paying the admission fee in the next year by remitting subscriptions in time i.e. within 15th July. Members may contribute papers for presentation at the Science Congress. They will receive, free of cost, reprints of the Proceedings of the Session of any one section of their interest and also the bi-monthly journal of the Association Everymans Science for that year only. For Renewal of Membership please download the form from ISCA website.

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2. Sessional Member: If for some reasons, Annual Members fail to renew their Membership by remitting subscription prior to 15th July each year, their Membership for the year would be restricted to Sessional Membership without voting right. Sessional Member has to pay ₹ 200/- (for foreign $50). A Sessional Member shall have the right to present paper / poster at the session of the congress of which he/she is a member. A Sessional Member shall not be eligible to participate in the voting process. A Sessional member shall not be eligible to participate in the Business meetings of the Sections and the General Body.

3. Student Member: A person studying at the under graduate level may be enrolled as a Student Member by paying an annual subscription of ₹ 100/- only provided his/her application is duly certified by the Principal/Head of the Institution/Department. A student member shall have the right to submit papers for presentation at the Session of the Congress of which he / she is a member, provided such papers be communicated through a Member, or an Honorary Member of the Association. He/She shall not have the right to vote or to hold any office. A student member shall not be eligible to participate in the Business Meetings of the Sections and the General Body.

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5. Everyman’s Science Vol. L No. 3 August’15- September’15
5. **Institutional Member**: An Institution paying a subscription of ₹ 5,000/- (for foreign** U.S.$ 2,500) only, can become an Institutional Member of the Association for that financial year. It shall be eligible to nominate one person as its representative to attend Annual Session of the Science Congress. An Institutional Member shall be eligible to receive, free of cost, a copy of the complete set of Proceedings of the Annual Science Congress Session as also a copy each of the Associations journal Everyman's Science.

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* भर्त शुलभ र 50/- सिर्फ एक नवे वारिष्क सदस्य के लिए जसरी है। वह सदस्य/आजीवी सदस्य/संस्थान सदस्य/छात्र सदस्य/दाता के लिए जसरी नहीं है।

* Admission fee of ₹ 50/- is needed only for becoming a new Annual Member and not for Sessional Member/Life Member/Institutional Member/Student Member/Donor.

** (एक विद्वान सदस्य का अर्थ है, जो भारतवर्ष के बाहर का नागरिक होता।)

**(A Foreign Member means one who is normally Resident outside India).**

(अ) **पेपर पेषन करना**: एक पूर्ण पेपर की प्रति उसके साथ तीन सारांश की प्रति जो 100 शब्दों से ज्यादा न हों और जिसमें कोई अरेख या फाइलाता न हों, वह प्रत्येक वर्ष 15 सितंबर के अंदर अनुभावी अनुशासन के प्रति पर पहुँच जाना चाहिए।

(A) Presentation of Papers: A copy of complete paper accompanied by an abstract in triplicate not exceeding one hundred words and not containing any diagram or formula, must reach the Sectional President latest by September 15, each year.

(ब) सभी बागों के सदस्य जो विज्ञान कांग्रेस सत्र में भाग लेने के पश्चात लौटने समय के टिकट में स्वायत्त प्राप्त कर सकता है, व्यक्ति जिनको उनकी यात्रा के खर्च का योग्य भी भाग सरकार (मनोयोग या राज्य),
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(B) Members of all categories are entitled to Railway Concession of return ticket by the same route with such conditions as may be laid down by the Railway Board for travel to attend the Science Congress Session provided that their travelling expenses are not borne, even partly, by the Government (Central or State), Statutory Authority or an University or a City Corporation and their total earning of or emoluments drawn do not exceed ₹ 5,000/- (Rupees Five Thousand per month). Please download the Railway Concession form from ISCA Website.

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(2) No money order, I.P.O., ECS or cheque will be accepted by ISCA. No Membership will be taken without duly filled in prescribed Membership Form (Application Form for New Membership/ Application for Renewal of Membership).

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सदस्यता के लिए नया आवेदन पत्र / Application Form For New Membership

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(iii) भर्ती शुल्क ₹ 50/- सिर्फ एक नये वार्षिक सदस्य के लिए ज़रूरी है। यह सदस्य/आंगनवाड़ी सदस्य/संस्थान सदस्य/छात्र सदस्य/दाता के लिए ज़रूरी नहीं है।

(iii) Admission fee of ₹ 50/- is needed only for becoming a new Annual Member and not for Sessional Member/Life Member/Institutional Member/Student Member/Donor.

(iv) सदस्यों से यह निर्देश जाता रहा है कि वे अपनी सदस्यता संबंध का उल्लेख भारतीय विज्ञान कांग्रेस संस्था के कार्यालय के साथ पत्रांतर के समय अवश्य करें।

(iv) Members are requested to mention their Membership No. while making any correspondence to ISCA office.

(v) भारतीय विज्ञान कांग्रेस संस्था द्वारा महीनौं, आई. आई. और. इसी. अ. प्रति चेक से भुगतान ग्राहण नहीं किया जाएगा।

(v) No Money order, I.P.O., ECS or Cheque will be accepted by ISCA.

(vi) कोई भी सदस्यता निर्धारित सदस्यता फार्म (आवेदन-पत्र नई सदस्यता/सदस्यता की नवीकरण के लिए) में विशेषता बहरी से नहीं लिखा जाएगा।

(vi) No Membership will be taken without duly filled in prescribed Membership Form

(Application Form for New Membership/Application For Renewal of Membership)

(vii) नकदी केवल ISCA मुख्यालय में हाथ से लिखा जाएगा। कुछ डाक में सीएससी के भीतर नकदी नहीं भेजें।

(vii) Cash will only be taken by hand at ISCA Hqrs. Pl. do not send the cash by Post within the envelope.