

IWSA NEWSLETTER

Volume 50

Issue No. 1

ISSN 0972-6195

January – April 2023



BRNS sponsored talk at Apeejay School, Nerul, Mumbai on 7th February



Cancer detection camp at Vashi on 25th February



Nellore Branch, 25th March
Neurology Health Hub at Aditya Degree College

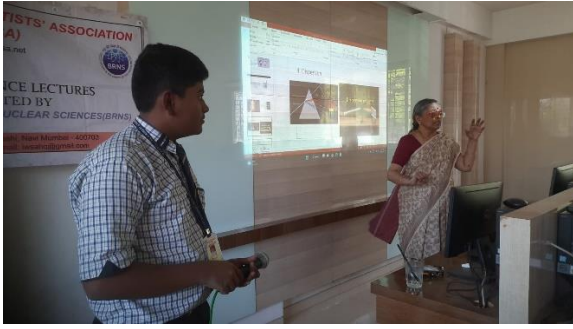


Scholarship Award Function 2023 on 4th February
at IWSA Head Quarters

BRANCHES

Roorkee 1979, Hyderabad 1979, Pune 1980, Nagpur 1982, Kolhapur 1982, Delhi 1987
Kalpakkam 1987, Baroda 1988, Amravati 2010, Bengaluru 2018, Nellore 2018

BRNS Sponsored talks in Schools and Colleges



D. R. Patil primary School, Turbhe, on 13th February



At UC College, Aluva on 14th February 2023



ICLES' Mon Ami High School Secondary English, Turbhe on 3rd Feb

Kids Summer Lit Festival - 2023 (11th March 2023)



From the Editor's Desk



Dear IWSA Members,

In this issue of Newsletter, you will find our regular features of reports regarding Popular Science Lectures, Science Awareness Activities, Activities regarding Early Childhood Education, Computer Centre, Library, Health Centre, Activities of various Branches etc. The activities reported in this issue were mostly conducted in offline mode barring a few which were conducted online. In our "Science and our Life" (SAOL) Lecture Series, two interesting lectures were conducted during the period of January to April 2023 (All online). Six popular Science lectures for college students (All offline) and five offline lectures for school students were held during this period. All these lectures were supported by BRNS and organised by IWSA headquarters at Mumbai, Kochi and Kothamangalam. There were additional seven BRNS lectures held by various Branches which are reported under the respective Branch reports. Internship programs for college students, Science Day Celebrations, Garden Based Learning, Reports from ECCED and Nursery Committee, courses on Computer Education, Tree Library for Children and Cancer Detection Camp by health Centre are some of our educative and community welfare programs reported in this Newsletter. IWSA Hostel celebrated the International Women's Day, where the hostel girls participated with great enthusiasm.

This issue also brings the interesting activities carried out at IWSA Branches at Amravati, Baroda, Bengaluru, Hyderabad, Kalpakkam, Kolhapur, Nagpur, Nellore, and Pune. The articles on Millets – the Superfood and about the Millet Queen of India – Lahari Bai are appropriate for starting the celebrations on Year of Millets – 2023. We have reported about two women achievers – Ms. Bhagwani Devi Dagar, who aged 95, won three gold medals in Discus Throw at the World Masters Athletics Indoor Championship in Torun, Poland, and Prof. Vidita Vaidya, who was awarded the Infosys Prize 2022 in Life Sciences. We have also highlighted the achievements of two IWSA members, Prof. Jyothirmayee Mohanty, who has won the IUPAC award under the Distinguished Women in Chemistry and Dr. Nupur Bahadur, who is featured amongst 10 Indian Water Sheras in the third book in the series "She Is-", showcasing women's leadership in diverse fields – (sustainability, STEAM and water) published by the Office of the Principal Scientific Advisor to Govt of India and Red Dot Foundation. I hope that all of you will enjoy reading about these reports and the scientific information content of this Newsletter.

With best wishes

Shyamala Bharadwaj

shyamala.bharadwaj@gmail.com

Contents

From the Editor's Desk
President's Message
Reports from Headquarters
Reports from Branches
Women Achievers
Millets: Superfood for Food Security
Millet Queen of India- Lahari Bai
IWSA Members Honored

BOARD OF TRUSTEES OF IWSA

Dr. Sunita Mahajan	Chairperson
Dr. Bakhtaver S. Mahajan	Secretary
Dr. V. Sudha Rao	Treasurer
Dr. Surekha Zingde	Member
Dr. Devaki Ramanathan	Member

EXECUTIVE COMMITTEE: 2021- 23

Dr. Rita Mukhopadhyaya	President
Dr. Shyamala Bharadwaj	Vice President
Ms. Madhu Pahwa	Secretary
Dr. Nootan Bhakal	Treasurer
Dr. Suparna Kamath	Jt Secretary
Dr. Paramjit Anthappan	Jt. Secretary
Ms. R. Bhuvaneshwari	Member
Ms. Vijaylakshmi Tilak	Member
Ms. Tripta Tewari	Member
Ms. Sukhvinder Sandhu	Member
Ms. Priya Jacob	Member
Dr. Lalitha Dhareshwar	Immediate Past President

Editorial Board

Dr. Shyamala Bharadwaj (Editor)
Dr. Lalitha Dhareshwar
Dr. Susan Eapen
Dr. Dhanya Suresh
Dr. Sheela Donde
Dr. Paramjit Anthappan
Dr. Smitha Kekatpure

President's Message

New year Greetings and Good Wishes for the year 2023 to all our readers. The Triennial conference due in December 2022 has been postponed to June 2023 when IWSA will be completing its fiftieth anniversary.



We are looking forward to having many of you visit the HQ and participate in deliberations. Members from HQ & branches are actively planning and executing responsibilities of various committees for the Golden Jubilee Celebrations. The journey of fifty years is being compiled for a publication. Members from the LGLM have come up with an idea to publish a book on Millets for children. This would mark as IWSA's contribution towards the International year of millets. Lately we find student coming forward to shoulder many of our activities. They bring newer ideas and their compliance with social media is expanding our outreach.

In this quarter we gave away annual scholarship to girl

students, ignited young minds with novel theme for annual science exhibition, mentored interns for their projects and compilation of results. The NL issue is full of its regular news and the activities conducted by the branches for GJC.

Enjoy a good read and keep an eye on the website for information on the upcoming conference. Regards.

Dr. Rita Mukhopadhyaya
rita45@gmail.com



Reports from Head Quarters

Science Awareness Programs

A. IWSA – BRNS Popular Science Lectures for Colleges

These lectures were conducted onsite or online at various Colleges on the topics of interest to the College. The speakers were identified by IWSA. Students from various classes-FY BSc-to-MSc, attended the lectures along with faculty. For each of the lectures the audience was informed about IWSA and the college. The lectures were followed by discussions with the speaker.

1. Lecture on 14th Feb. 2023 at Depts of Biosciences, Botany, Chemistry and Zoology, **Union Christian College, Aluva, Kochi**, by **Dr. C.N. Ramchand**, CEO, Mag Genome Technologies Pvt. Ltd., India & USA.

Topic: Discovery and development of synthetic anti-VEGF FAB for treating wet-macular degeneration and diabetic retinopathy

Abstract: Diabetic retinopathy is an irreversible blood vessel damage in the retina that occurs due to diabetes and is the leading cause of visual impairment of approximately 2.1% of world population. The molecule FAB293 developed by Theragen Biologics Private Limited (TBL) is superior to existing drugs in terms of affinity and stability and decreases the frequency of injections. FAB293 would also be more affordable and reachable to wider population. FAB293 is a 48kDa synthetic humanized anti-VEGF Fab (Fragment Antigen Binding). It is a novel biologic expressed in microbial system (*E. coli* BL21). FAB293 has been developed using Phage display library with several rounds of affinity maturation for selection of clones, followed by site directed mutagenesis in CDRs for improved antigen binding towards hVEGF (Vascular Endothelial Growth Factor). The fab molecule engineering, the downstream processing, optimization and developmental process of molecular biology and bioreactor scale-up cultivation, anti-VEGF FAB201 purifications and orthogonal analytical tests were discussed in detail. The accelerated stability and stress stability studies, bioanalytical studies like quantitation, in-process impurities analysis, biochemical & biophysical characterization, analysis of batch consistency, *in vitro* binding affinity, *in vitro* efficacy study for batch release assay and *in vivo* efficacy studies performed were also explained in detail by Dr. Ramchand.

Outreach:150

2. Lecture on 27th Feb. 2023 at **Sir Sitaram & Lady Shantabai Patkar College of Arts and Science and V. P. Varde College of Commerce & Economics (Autonomous)** Department of Microbiology and Biotechnology Goregaon, Mumbai by **Dr. Surekha Zingde**, Trustee, IWSA, Former, Deputy Director, Cancer Res. Inst. ACTREC, Navi Mumbai.

Topic: My Career Path: How do I decide

Abstract: When we are young, we look forward to becoming Scientists, Professors, Doctors and Engineers, Business administrators, Entrepreneurs etc and even win a Nobel

prize. After completing our school education, we appear for the many exams which give us the opportunity to join educational institutes based on our performance. These placements do not always meet the requirements for the dreams we had for our future careers. In the Institutions where we start our graduate and post graduate studies, we are exposed to different subjects which most often make us wonder what next.

This lecture guided the audience to decide on how to plan their next stop in their educational journey towards a career or a job they will be able to enjoy.

Planning our future is with us. One has to create a Mind Map for self, wherein the likes and dislikes are brought together. One can then start the sorting process to narrow down to the likes. In this digital era, there are opportunities to scan the possible openings which fall in with their dream career. Remember, to achieve this dream position, one need to commit to planning, hard work and perseverance. The road ahead will then be a wonderful journey that one will be happy to look back on.

Outreach: 72

3. Lecture on 1st March, 2023 at Dept of Biochemistry, Biotechnology and Microbiology, Mar Athanasius College (Autonomous) Kothamangalam- Kerala by Dr. Anu Yamuna Joseph Primordia Life Sciences, KRIBS-BIONEST Kalamaserry, Kochi
Topic: Current Trends in Molecular Diagnostics

Abstract: There is an increased demand for reliable early-stage diagnosis of chronic ailments and infectious diseases. The key requirements for diagnostic tests are sensitivity and specificity as well as speed and accuracy. Molecular diagnostic technics facilitate sensitive and rapid detection of infectious diseases, chronic ailments and genetic disorders. The increased demand for molecular diagnostics is due to adoption of novel techniques in clinical diagnostics, growth in genomic based research and increased use of molecular biology.

Outreach:160

4. Lecture on 11th March, 2023 at Fr. Conceicao Rodrigues Institute of Technology Vashi, Navi Mumbai by Dr. Anita Sengupta, CEO Hydroplane Ltd. & Prof. Astronautical Engineering, University of Southern California,USA.

Topic: Red Mars, Green Mars, Blue Mars: How the space program creates sustainable technology.

Abstract: A review of how the challenges of all space missions, especially EDL missions, requires a design mind set to maximize efficiency, minimize mass, and make the impossible possible. The lecture touched on how space technology and design philosophy can serve to mitigate climate.

Outreach: 180

5. Lecture on 13th March, 2023 at Vivekananda Education Society's Inst of Technology, Hashu Advani Memorial Complex, Chembur, Mumbai, by Mr. Mustafa Fatakdawala, Senior Financial crime Specialist, Tata Consultancy Services, Mumbai.

Topic: Combating Financial Crimes using AI and ML

Abstract: Financial crimes such as money laundering, terrorist financing, and payment fraud are on the rise. Unfortunately, as technology and transaction volumes have grown, so has financial crime. The pandemic has also worsened the issue because criminals love

disruption. As financial crimes become increasingly sophisticated, detecting and mitigating fraud have become a key priority for the financial services sector. Banks are now looking at how they can improve their processes, use their data more effectively, and how they can harness new AI/ML technologies to increase their automation and enable better decision-making.

Outreach: 180+

6. Lecture on 18th March, 2023 at Vishnu Waman Thakur Charitable Trust's Bhaskar Waman Thakur College of Science, Yashvant Keshav Patil College of Commerce, Vidhya Dayanand Patil College of Arts, VIVA College, VIVA College Road, Virar(W), by **Dr. Pranesh Sengupta**, Senior Scientist, Materials Science Division, BARC, Mumbai.
Topic: SAPNE-Spatial Advancement Powered by Nuclear Energy

Abstract: The advent of industrialization and information has expanded human horizons, while also driving an increasing demand for energy. At present, most of this energy demand is catered to by fossil fuelled thermal power sources, and the power generation sector alone accounts for over 70% of the global greenhouse gas emissions. Among the leading countries, India's rapid economic growth allied to a large population means a judicious approach to energy security must be adopted, while also protecting the environment. Indeed, while India ranks fifth in global energy consumption and third in overall carbon emission, it only ranks 104th in per capita electricity consumption and emits per capita less than 1/10th that of a developed country. With a rising standard of living and disposable income, Indian per capita electricity consumption is expected to quadruple in the coming decade, and meeting this demand from fossil fuels would likely precipitate an ecological catastrophe. The rising demand for clean energy, though the increasing penetration of renewables into the energy mix, still will require nuclear power as an energy dense base driver. Toward this, India has adopted and has demonstrated expertise in various aspects of the closed, three stage fuel programme with re-processing as its centre piece.

Outreach: 125

B. IWSA – BRNS Popular Science Lectures for Schools

These lectures were conducted onsite at various schools on the topics of interest as advised by the principal. The speakers were identified by IWSA. Students from classes-8th Std to 12th Std attended the lectures. The abstracts are given below.

1. Lecture on **12th January, 2023** at Dr. Pillai Global Academy, by **Dr. Bhaskar Saha**, Asst. Prof. Dept. of Life Sciences and Biochemistry, St. Xavier's College, Mumbai.
Topic: Neuroplasticity: The Basis of Learning from Early Life to Adulthood

Abstract: Neurons, the structural and functional unit of the nervous system, are one of the most dynamic cell types found in the body. Axonal projections form synapse with other neurons, and these connections are responsible for information acquisition, processing, and storage. These synaptic connections are formed or retracted continuously in the brain, which is known as 'plasticity'. This plastic behaviour of neurons is maintained throughout the life and is basis of our memory as well as forgetfulness.

This talk covered the cellular basis and some interesting aspects of neuronal plasticity.

Number of attendees: 95

2. Lecture on **30th January, 2023 at ICL High School, Vashi**, by **Dr. Pradip Chaudhari**, Scientific Officer, Comparative Oncology Program & Small Animal Imaging Facility, Animal Oncology Group, ACTREC, Kharghar, Navi Mumbai.

Topic: Cancer Insights

Abstract: Cancer – one of the most feared diseases, where some of the body cells grow uncontrollably and spread to other parts of the body. Human body is composed of trillions of cells and cancer can start almost anywhere. Cancer is a genetic disease, it is caused by changes to genes that control the way our cells function, especially how they grow and divide. This disease starts with a mutation in gene, a mutation is defined as a sudden abrupt change in nucleotide sequence. The accumulation of harmful mutations in cells leads to unrestricted proliferation of cell.

Normally, human cells grow and multiply through a process called cell division to form new cells as the body needs them. When cells grow old or become damaged, they die, and new cells take their place. This orderly process breaks down in cancer, where abnormal or damaged cells grow and multiply without any inhibition. These cells may form tumors, which are lumps of tissue. Tumors can be cancerous or not cancerous (benign). Cancerous tumors spread into, or invade, nearby tissues and can travel to distant places in the body to form new tumors (a process called metastasis). Cancerous tumors may also be called malignant tumors. Benign tumors do not spread into, or invade, nearby tissues. When removed, benign tumors usually don't grow back, whereas cancerous tumors sometimes do. Benign tumors can sometimes be quite large and some can cause serious symptoms or be life threatening, such as benign tumors in the brain. Cancer cells differ from normal cells in many ways. For instance, cancer cells grow without any restriction, they ignore signals to stop dividing or to die (a process known as programmed cell death, or apoptosis). The body normally eliminates cells with damaged DNA before they turn cancerous. But the body's ability to do so goes down as we age. This is part of the reason why there is a higher risk of cancer later in life.

Early diagnosis plays important role in success of treatment and survival of patient. There are various ways to diagnose and treat cancer. When there is delay in cancer detection there is lower chance of survival, greater problems associated with treatment and higher cost burden.

Understanding of key factors in Cancer prevention is important to keep this disease away. Other than human this disease is seen in all animals and there are very interesting facts about animal cancers. This talk gave an overview of cancer in general across different species.

Number of attendees: 50

3. Lecture on **3rd February, 2023 at ICLES' Mon Ami High School Secondary English, Turbhe** by **Dr. Kundan Sengupta**, Professor and Associate Dean, IISER, Pune.

Topic: Chromosomes

Abstract: Chromosomes are the most basic structural entities composed of DNA and proteins. Humans have 23 pairs i. e. 46 chromosomes, which interestingly form 46

chromosome territories in the nucleus of a human cell. How do chromosomes form when cells divide? How are they organized? Does their organization matter? Every chromosome has a fascinating tale to tell!! How can we work with chromosomes to understand what they hold in store for us? Would studying chromosomes help us in curing diseases? These were some of the questions that were addressed in the talk.

Number of attendees: 65

4. Lecture on **7th February, 2023** at **Apeejay School**, Nerul, by **Dr. Yojana Singh**, Senior Manager, Market Research and Publicity, Board of Radiation and Isotope Technology, DAE, BARC, Vashi Complex, Vashi.

Topic: Application of Nuclear Energy in Agriculture

Abstract: Since the creation of universe, natural radiation has been an integral part of our environment. However, man has learnt the use of artificial radiation merely a century ago. Since then, application of radiation has played a significant role in improving the quality of life of human beings. Though we are aware of its importance, the fear created by use of nuclear weapons is so deep, that we are still struggling to overcome it.

Department of Atomic Energy, DAE, is contributing significantly in the development of nation using nuclear energy & radiation in health, agriculture, industries & research. In this lecture the utility and importance of radiation of Food was explained.

Food irradiation is used because this technology can reduce food loss and facilitate agricultural exports – important for our country to sustain agriculture economy – a great help for our farmers. Irradiation is a regulatory requirement for the phytosanitary treatment of fruits and vegetables for export. It is an effective and safer technology than fumigation and suitable for heat sensitive/aroma and flavoured food products and pre-packed foods.

Number of Attendees: 89

5. Lecture on **13th February, 2023** at D.R. Patil Primary School, Turbhe, by **Ms. Lalitha Ramaswami**, Retd. Physics Teacher, National Award as Best Teacher from the president of India.

Topic: Light is very light

Abstract: Physics is what we deal with in everyday life. Light is the most beautiful and complicated form of energy in nature which is so much essential in our life. The phenomenon of reflection helps us tremendously in our daily activities. So, we are curious to know and understand about it. Details about reflection of light was discussed.

Number of attendees:82

C. IWSA – BRNS “Science and Our Life” Series of Webinars

The following webinars were conducted through Zoom platform during September to December 2022 under “Science and Our Life” Series.

1. Lecture on **26th February, 2023**, at 5pm on Zoom online platform of IWSA, by **Dr. Raghavan Parthasarathy**, National consultant, “Monitoring and Evaluation” portfolio of National TB Elimination Program, India WHO Country Office

Topic: Bringing back to the focus –Is Tuberculosis a public health problem in India?

Abstract: India– as we know is one of the “highest TB burden” countries in the world. But, are we giving it the attention it needs? How many of us know that, India has the highest of many attributes pertaining to TB? Recently published National Tuberculosis Prevalence Survey (2019-2021) is describing a glaring picture on the health seeking behaviour of the Indian population (with respect to TB) plus symptomatology among the affected patients. Thus, it’s never late to know the facts and figures about a century-old disease that is creating havoc in India, especially among the vulnerable communities and productive age-group. TB is easily diagnosable, diagnostic services are easily accessible and when diagnosed is curable with free-of-cost drugs. “Common things first” – the talk emphasized on knowing about TB, making people empowered scientifically, demystifying the age-old myths and the disease de-stigmatized.

Outreach:22

2. Lecture on **27th March, 2023**, at 5pm on Zoom online platform of IWSA, by **Dr. Anand Krishnan, Assistant Professor, IISER Bhopal**

Topic: How the structure of the bird bill influences its function

Abstract: The evolution of morphological traits is often strongly influenced by functional and biomechanical demands. Perhaps the best example of this is the avian bill, a multifunctional appendage consisting of an inner bony core and an outer keratinous rhamphotheca, which presents a unique opportunity to study the relationship between form and function. Among the varied functions of the bill, certain groups of birds use their bills to excavate tree hollows for nesting, roosting and feeding. The physical stresses experienced during this demanding task may be linked to bill shape and material properties, and also to broader factors like external environmental conditions. My research group examines these relationships in the frugivorous barbets, which occupy diverse climatic regimes and excavate nest hollows in trees. Using micro-CT scans of museum specimens, morphometric analyses and biomechanical models, an integrative, interdisciplinary understanding of the evolution of morphological traits in birds was presented.

Outreach: 35

D. IWSA – Student Internship Program

1. SIES College of Science, Arts and Commerce, Sion (10th Jan -10th Feb): 29 students from SIES College of Arts, Science and Commerce, Sion did internship in IWSA from 10th Jan to 10th Feb 2023. They were divided into 6 groups and they worked on 3 topics as given below (One topic for 2 groups).
 - a. A Study on Dry leaves Composting using bacterial and fungal inoculum
 - b. Potential of Waste Mangrove Apples as Raw Material for Production of Bioethanol
 - c. Screening of PGP properties and Heavy Metal Tolerance of Rhizospheric

Microorganisms in the Mangrove Ecosystem.

In addition, a course on Introduction to Bioinformatics and Software for protein 3D structure analysis was offered to all the students over 10 sessions. Resource person for the above was Mr Neeraj Gaur.

E. Activities in Collaboration with Vigyan Prasar

VIPNET Science Club

The VIPNET Science Club (VP-MH 0248) received a certificate of appreciation in recognition of the outstanding performance for VIPNET related activities in the calendar year 2022.

F. Celebration of Science Day

Every year National Science Day is celebrated at IWSA in the month of February by way of Exhibition or contest on an important scientific topic. This year after a gap of two years, the Science Exhibition was back at IWSA in the offline mode on 10th and 11th February, 2023. The theme for this year's contest was: "Smart waste management technology." Entries were invited under two categories:

I category- Working models along with presentations/videos.

II category- Development of Computer Apps on the theme of the exhibition.

There were entries from 7 schools across Navi Mumbai. Two groups of judges evaluated the two categories. Mr. Rohit Malhotra, environmentalist, inaugurated the exhibition and talked about the importance of waste management to save the environment and better living for all. Category 1 projects were evaluated by Dr. D. V. Prabhu, Dr. Savita Rajiv and Dr. Srirupa Mukherjee. First prize in Category 1 was awarded to Atharv Pore, Pranav Anandkrishnan, Rochelle Joseph from std 8 from Fr. Agnel Multipurpose School, Vashi for their project entitled E-Scavengers. The Runners up were- a) Shambhavi Madhav Kumar Jha, Abhinandan Manmohan Choudhary and Amruta Khandu Ghule from Modern School, and Jr College, Vashi for their project entitled Smart waste sorting and b) Hrishikesh Sunil Khanolkar, Advait Mahendra Bhagat and Aarushi Mritunjay Sharma from St. Mary's Multipurpose high School and Junior College for their project entitled Toxin- free Smart waste management.

Judges for category 2 were Dr Sunita Mahajan, Ms. Akhila, and Ms. Shalini Mittal and the evaluation was done in an online zoom meeting. The winners were Tannu Gupta, Payal Mishra Abhishek Shah from NMMC SCHOOL NO 76 for their Garbage Locator App. Runners up were Swarn Ghorpade, Samrat Ashok Bhadarge and Vaibhav Londhe from NMMC School No. 42, Ghansoli for their Clean NMMC App (An App for Garbage Collection).

Dr Rajesh K. Vatsa, Head, Public Awareness Division of DAE in his valedictory address reiterated the importance of education and encouraged students to excel in whatever field they select. A question answer session after his speech made the children open and ask many questions on science and technology and the environment. The Department of Atomic Energy displayed their technologies on smart waste management. The total outreach was 325.

G. Garden-Based Learning (GBL) Activities

Visit of students from Acharaya College: A batch of 14 first year architecture students from Acharaya College, Chembur, visited IWSA campus with the aim to complement 3 sections of our Learning Garden with relevant artifacts created from waste and rain proof material. The student batch were accompanied by their faculty teacher. The students divided themselves into 3 groups to keenly study 6 plant sections to read and design the relevant artifacts for complementation. The three sections were 1. Primitive section, 2. Butterfly section, 3. Desert section, 4. Sensory sound (bamboo) section, 5. sensory taste (fruits and veggies) section, 6. Sensory smell (fragrant flowers) section.

Visit of students from KBP College: Another group of 17 FY and SY BSc students from KBP college deputed by the Principal, Dr. Shubhada Nayak visited to initiate volunteer work requirements for IWSA's triennial (at our request). An orientation meet was conducted with them to understand their exposure skills at their institute to align with our needs for triennial work.

Millet Recipe Competition: As a part of observing International Year of Millet 2023, a recipe competition, 'Millets for Children' was initiated.

H. IWSA Scholarship

IWSA Scholarship Award function was held on 04.02.2023 at 4:00 p.m. (at ICICI Multipurpose Hall). Chief Guest was Prof. Prasanna Venkatraman, Deputy Director, Cancer Research Institute, ACTREC, Navi Mumbai. She gave a talk on the topic "Female Nobel Laureates". Total participants were 70 (Awardees + guests). Three awards were given to Ph.D. students, five awards to M.Sc. students, eight awards to B.Sc students and three to ECCE students. All applicants were from Maharashtra. The chief guest emphasised the need to give travel grants and also scholarships from the IWSA branches all over India.

Community Programs

A. Indirabai Padhye Nursery School and Education Committee

a. **Graduation function:** Report cards of 2021-22 ECCE batch were issued and a Graduation function was held on 18th February.

b. **Shikshan Setu** under Vigyaan Prasar: Trainees attended 6 workshops conducted by senior resource people from the education industry along with teachers from other schools from 27th March onwards. Outcome was better and wider exposure to content related to early childhood education.

c. **Summer Lit Fest** at IWSA on 11th March 2023 - With over 500 parents and children attending the fest, trainees showcased various experiments, creative activities, games, puppet show etc. to them. Outcome-Trainees got an excellent exposure of working with parents and children of different age groups. They also learnt how to deal with a huge volume of children at one time. This event was covered by AWAAZ TODAY. The event overall had an overwhelming response.

d. **Nutrition Competition** on 21st March, 2023- Since IWSA was celebrating the International Year of Millets, the theme of the contest was based on Millets. The topic of the competition was “Low cost, Nutritious Millet Based Finger Foods for Pre-schoolers – Snacks and Sweets” Trainees prepared and presented a variety of delicious dishes. Outcome- Trainees gained good knowledge of how to use millets in daily meals which are healthy for children. Fifteen trainees participated- and there was a knowledge exchange of 30 recipes thereby adding value to them.

e. **Workshop:** Five teachers attended Two-day online workshop conducted by Swati Popat, organized by ECA, titled A-Z of ECCE.

f. **Visits & Other Activities:** In January, Trainees visited the following schools: - Udhyanchal High School (Godrej campus at Vikhroli). -Basant Montessori School, Juhu - Adapt Spastics Society, Byculla Outcome- Trainees got an opportunity to observe and understand how these schools work using different and unique methodologies to teach in the early years. They also got to interact with teachers / coordinators at these institutes.

g. **Others:** Semester 1 Result was declared on 18th April: 5 students secured A+, 6 students secured A, 2 students secured B and 1 failed.

h. **Celebrations:** Nursery school students participated in Summer lit Fest. They also participated and enjoyed activities conducted by tree library on 27th March 2023. They also celebrated Gudi Padwa and Holi.

B. IWSA’s Day Care and JMM Working Women’s Hostel

Celebrations

1. **Hostel Day:** IWSA’s “JMMWW” Hostel celebrated its 35th Hostel Day on 7th January 2023 with great enthusiasm. The celebration started one week prior to the hostel day. The hostel girls actively participated in various sports like the memory game and carrom which were played indoors and musical chair, marble and spoon and kho-kho which were played outdoors. All the games were conducted by Hostel committee members, Mrs. Smita Kekatpure, Mrs. Madhu Pahwa, Mrs.Chhaya Kelkar, Mrs. Malti Rao, Mrs. Snehlata Bhavsar and Mrs. Sukhvinder Sandhu. On 7th January 2023 cultural programme was

organized in IWSA's multipurpose hall. Hostel girls with the help of supervisors Apoorva and Jayshree decorated the hall and made rangoli's. The programme began with lighting the Samai by our founder member Dr. Sudha Padhye, Trustee Chairman Dr. Sunita Mahajan, Trustee and Ex- President Dr. Niyati Bhattacharya, President Dr. Rita Mukhopadhyaya, Hostel convenor Mrs. Madhu Pahwa and Mrs. Chayya Kelkar. Dr. Sudha Padhye shared some of her memories of the hostel with the girls. Dr. Sunita Mahajan and Dr. Rita Mukhopadhyaya gave brief talks. Hostel girls performed solo and group dances and enthralled the audience. The programme was coordinated by Mrs. Smita Kekatpure, Secretary, Hostel committee along with the hostel girls and hostel committee members. Prizes for sports, best kept rooms, dorms and for all the participants of the programme were announced by Mrs. Smita. Kekatpure. The programme was followed by dinner in the Hostel canteen.

2. **Women's Day:** Women's Day was celebrated for the first time in the IWSA hostel on 13th March 2023 in the Multipurpose Hall at IWSA, Vashi. Conceptualized and organized by Hostel Committee Secretary Smita Kekatpure, the Women's Day celebration was a grand success. The theme for the day was "Soaring against odds". Guest speaker Mrs. Vijaya Chakravarthy kept the audience glued as she talked about various aspects on how a woman can soar against odds by utilizing opportunities at every bend of the road. Many girls staying in the hostel participated with enthusiasm. Rachna Surekha shared her experience as a working woman while Shreni Budhale recited a poem. Akshata Shedge, a social worker, shared her experiences about the plight and sufferings of young sex workers. Neha Ghosh and Tanisha Sahani performed a beautiful dance. The programme was attended by Trustees Dr. Bakhtawer Mahajan, Dr. Devaki Ramnathan, Senior Hostel Committee Members Mrs Chhayya Kelkar, Mrs. Kumudini Balkrishnan and Hostel Committee Convenor, Mrs. Madhu Pahwa along with other IWSA members and guests. The programme was compered by Ashwini Ghangurde and Hostel Committee Secretary Smita Kekatpure proposed the vote of thanks.

C. IWSA's Satish Haware Computer Education Centre

The following programs were conducted by the CEC.

1. Basic computer course from 31st Jan to 28th Feb.
2. Science Apps by students as part of Science Day celebration.
3. Visit by interns from SIES college, Sion
4. Visit of Nursery kids for story telling session

D. IWSA's Piroshja Godrej Foundation Library

1. **A visit of IWSA's nursery kids** was arranged to CEC for Story telling session organised under the aegis of our inaugural garden tree library activity. The session presented a true-life tale of turtles to the kids, which was very entertaining and thrilling to them. A healthy blend of virtual technology and real world was provided to the children using the inbuilt facilities of computers and the tree library open space, for experience of a nature lap!

2. **Tree library:** Floor games were painted by students of Lokmanya Tilak Institute of Architecture and Design Studies (LTIADS), Navi Mumbai.

E. IWSA's Murli Laj Chugani Health Care Centre

1. **Medical and Dental Checkup for DCC, Hostel and Kitchen staff:** This was conducted by Dr. Varsha Verma and Dentist, Dr. Rachel Thomas in January to March 2023.

2. **Talk on importance of movement in Children for DCC parents:** This talk was delivered by Paediatric physiotherapist, Dr. Revati Nalawade on 18th February.

3. **Cancer detection camp on 25th March:** IWSA's MLC Health Care Centre jointly organized its annual free Cancer Detection Camp with St. Mary's Tejaswini School, Vashi, Navi Mumbai. The annual camp is held under the aegis of Indian Cancer Society for early diagnosis and prevention.

To ensure maximum participation, IWSA members visited the school community to raise awareness about the camp. These visits also helped to interact with the teachers who further encouraged and motivated the illiterate mothers of children to attend the camp. Beneficiaries of the camp included underprivileged women from nearby areas, teachers, and few IWSA staff. The camp was a great opportunity for these women to get access to screening which they might not have been able to afford otherwise besides the social stigma and lack of awareness.

The camp commenced with registration of the participants where details such as ID proof, medical and family history were noted. These details would ensure that they could be contacted for follow-ups if needed. The process was smoothly conducted with the assistance of volunteers who helped the participants to fill the registration form. The participants were assembled in the school and were sent in batches for the camp.

Complete Physical Examination, Complete ENT Examination, Clinical Breast Examination, Comprehensive Gynaecological Examination and VIA Test were conducted during the screening process by the ICS medical team that comprised of two gynaecologists Dr. Jyoti Taskar and Dr. Michelle Fonseca, ENT surgeon Dr. A.D.S. Irani, and physician Dr. Priyanka Rathod along with Nursing staff and technicians.

Self-explanatory posters were displayed to raise awareness. Mothers were counselled and educated on timely check-ups to gain confidence and be updated with health conditions. Physiotherapist, Dr. Aditi Prabhukuluskar offered consultation on aches and pains. Among the 100 ladies scanned in the age range of 30 to 65 years, there were 5 tobacco users. Only one case of suspected cervical cancer was identified.

Impact of the Camp: Teachers and medical team appreciated the efforts undertaken by IWSA. Mothers expressed their gratitude towards the organizers for making them understand the significance of the camp. Teachers who were apprehensive felt more confident after the camp to attend screening. The camp is being conducted annually by IWSA MLC Health Care Centre through kind donations received from Ms. Jyoti Nadkarni in the memory of her parents, Dr. Jayashree Nadkarni and Dr. Jagdish Nadkarni. The program helped IWSA meet one of its mandates of Science for Society.

Reports from Branches

Amravati Branch

IWSA BRNS Popular Science Lecture on 11th March 2023:

Lecture on 11th March, 2023 at Vidya Bharati Mahavidyalaya, Amravati by Dr. Anil Gore, HOD Dept of Electronics, Vidya Bharati Mahavidyalaya, Karanja, Washim,(MS).

Topic: Snake bite management

Abstract: Snake bites are a medical emergency and prompt treatment is essential to prevent serious complications and death. The management of snake bites involves the following step. Do 'RIGHT' Keep the affected part/limb immobilized and at or below the level of the heart. Do not try to suck out the venom. Monitor vital signs, such as pulse, blood pressure, and breathing. Administer polyvalent ASV to the "Big four" snake responsible for the bite as soon as possible. The choice and dose of antivenom may vary based on the species of snake, severity of envenomation, and the patient's age and medical history. Maintain Airway, Breathing and Circulation (ABC). Administer oxygen, fluid, and electrolyte replacement as needed. Patients should be closely monitored for several hours after antivenom administration and may require hospital admission for further observation and treatment.

Outreach:165

Baroda Branch

1. National Workshop: A national workshop was held from 3rd to 11th March, 2023 on the topic "**Basics of Remote Sensing and Geographical Information System**". This was organized by Indian Society of Geomatics (Vadodara Chapter) in collaboration with Department of Botany, Faculty of Science, The Maharaja Sayajirao University of Baroda, Vadodara in support with Indian Science Congress Association (Baroda Chapter) and Indian Women Scientists' Association (Baroda Branch).

Remote sensing is an art and science of obtaining information about an object or feature without physically coming in contact with that object or feature. Remote sensing and Geographical Information System involves the process of inferring surface parameters from measurements of the electromagnetic radiation (EMR) from the Earth's surface. This EMR can either be reflected or emitted from the Earth's surface. In other words, remote sensing is detecting and measuring electromagnetic (EM) energy emanating or reflected from distant objects made of various materials, so that we can identify and categorize these objects by class or type, substance and spatial distribution. Remote sensing provides a means of observing large areas at finer spatial and temporal frequencies. It has a range of application in: Biodiversity studies, Land Use Land Cover, Agriculture Monitoring, Disaster management services such as flood and drought warning and monitoring, Climate change, Environmental monitoring, etc. The tools for remote sensing of natural resources have been developed considerably in the past decades. The objectives for the workshop were: 1. To introduce the principle of Remote Sensing (RS) and Geographical Information System (GIS) and demonstrate their application in various fields. 2. To familiarize participants with the tools for remote sensing of natural resources that have developed

considerably in the past decades. 3. To provide a platform for participants to interact with experts in the field and exchange knowledge and ideas. 4. To encourage participants to use Remote Sensing and GIS technology in their respective fields of work for better decision-making and management.

General outline of the workshop:

Day 1: Introduction to remote sensing and its applications • Overview of electromagnetic radiation and its interaction with Earth's surface • Types of remote sensing platforms and sensors
Day 2: GIS Fundamentals • Introduction to GIS and its applications • Overview of spatial data and metadata • Coordinate systems and map projections
Day 3: Biodiversity through GIS • Concept of Ecology and Biodiversity, • Biodiversity Management and Conservation using Geospatial Technology • Assessment of Biodiversity Hotspots
Day 4: Digital image properties • Spatial, Radiometric and temporal characteristics of image, • Optical Sensors, multi-spectral scanner system • Image data formats.
Day 5: Digital Image Classification • Introduction to image classification techniques • Supervised and unsupervised classification methods • Accuracy assessment
Day 6: Biodiversity through GIS • Introduction to biodiversity and its conservation • Use of GIS in biodiversity studies
Day 7: Valedictory function.

The workshop included lectures, hands-on training, and interactive sessions with experts in the field. Participants were provided with course material, including study materials and software tools for remote sensing and GIS. The course helped participants to get insight into the processing of Remote Sensing data and to enhance their understanding in the subject. 13 participants attended this program.

At the end of each day, participants were asked to evaluate the program and all of them highly appreciated lectures by all the speakers.

2. One Day Crash Workshop on “Artificial Intelligence in Spatial Data Analysis (From Scratch to Results)” on 31st March 2023.

One Day Crash Workshop on “Artificial Intelligence in Spatial Data Analysis (From Scratch to Results)” was conducted. This was organized by Indian Society of Geomatics (Vadodara Chapter), in collaboration with Department of Botany, Faculty of Science, The Maharaja Sayajirao University of Baroda, Vadodara, with support of Indian Science Congress Association (Baroda Chapter) and Indian Women Scientists' Association (Baroda Branch) on 31st March. The expert speaker for the workshop was Dr. Sanjay Shitole, Principal (Additional Charge) HOD, Associate Professor in Information Technology, Usha Mittal Institute of Technology, SNT Women's University, Santacruz (W), Mumbai. The workshop covered the following points: What is Artificial Intelligence? > Difference between Machine Learning (ML), Deep Learning (DL) and Artificial Intelligence (AI) > Learning rules and types of learning > Implementation of learning rules using Octave software > Application of Artificial Neural Network for different Case studies.

The workshop focused on the potential of Artificial Intelligence (AI) in spatial data analysis, particularly in processing large amounts of data from remote sensing technology. It highlighted AI's applications in different resource monitoring & assessment and urban planning. The workshop was effective in simplifying the understanding of AI for participants

from different Science and Engineering fields. The ability of AI to analyze and interpret spatial data, which has opened new possibilities for understanding natural and human-made systems on a global scale was covered along with the transformation brought by AI from predicting weather patterns to monitoring deforestation, how we study and respond to environmental challenges etc. were covered. A range of applications in Forest, Agriculture and Vegetational studies, Environmental studies, Natural resource management, Disaster management and Urban planning etc. were discussed. Twenty eight candidates from different institutes participated in the workshop.

Bengaluru Branch

1. **Awareness Talk on ‘Green the Red Revolution’**: An awareness talk on “Green the Red Revolution- An introduction to sustainable menstruation” was arranged which highlighted on menstrual hygiene and accessories used during menstruation by Industry expert Ms Pavitha G, Senior Manager, 3M, was arranged on 3rd March, 2023 as part of International’s Women’s Day. Women workers aged 30 to 50 years and girl students at BMS College of Engineering attended the talk. **Total Outreach: 200**

2. **Workshop on “Environment, Health & Safety** at the Department of Biotechnology, BMS College of Engineering on 28th to 29th March 2023 by Smt. Chaithanya Subrahmanya, Trustee, Mission Disha on Waste Management and Dr. Lalithapriya, Consultant Nutritionist on importance of nutritional food for well-being of humans. There were 25 participants for the workshop.

Hyderabad Branch

1. Sahaja Utpada (An Exhibition cum sale of organic products)

IWSA (Hyderabad branch) in collaboration with NSS Unit and Dept. of Microbiology, St. Pious X degree and PG College for Women, organized an event, Sahaja Utpada, Exhibition cum Sale of organic products on 13th January 2023. This event was organized on account of National Farmers Day also known as Kisan Diwas which is celebrated on 23rd December to commemorate and recognize farmers as the country’s backbone. The talk ‘Economic Empowerment of Women through Application of Science & Technology for Food, Nutrition, Health & Livelihood Security’ was delivered by Prof. Vijaya Khader, Former Dean, Acharya N. G. Ranga Agricultural University, Hyderabad. There were 185 participants for both the events.

2. **National Science Day Celebration on 25th February 2023**. The event was organized at Bharat Scouts and Guides Model School, Himayath Nagar where Dr. Anjali Devi, Nutritionist, Telangana Mahila University and member of IWSAH delivered a lecture on nutrition “Diet for Health” with live demonstration for high school children (from classes V to X). With great interest and enthusiasm about 120 students attended the session. Mrs. Varalakshmi, State Secretary, scouts and guides, Telangana state, Head master Mrs. Anuradha participated in the session.

3. **International Women’s Day**: International Science Day was celebrated on 10th March 2023 by holding a one-day national seminar on Advances in Life Sciences Research – an Interface to Microbiology and Chemistry. The event was organized in collaboration with Centre for Biotechnology, University College of Engineering Science and Technology, JNTU Hyderabad. More than 125 participants attended the event. Following lectures were

conducted during this event. > Speaker: Dr. Sharmistha Benerjee Department of Biotechnology, School of Life Sciences, University of Hyderabad. Topic: Iron dependent gene regulation in Mycobacterium tuberculosis. > Speaker: Dr. Y. Sabitha, Director, Ciencia Life Sciences, Hyderabad. Topic: Silico approaches in data modeling, docking studies, computer aided drug design and nutrigenomics. > Speaker: Dr. I. Lalitha Guruprasad, Professor, Department of Chemistry, University of Hyderabad. Topic: Ligand interactions with active site and studying the interactions in silico approaches.

Kalpakkam Branch

1. Celebration of National Science Day on 20.02.2023

National Science Day-2023 was celebrated by IWSA, Kalpakkam branch. On the eve of Science Day Celebration, IWSA, Kalpakkam organised Science Essay writing competition for the students of DAE township schools. Three topics viz. Micro-organisms in our life, Conservation of natural resources and Alternate material for plastics for students in 6th -8 th standards and for the students in higher standards, three topics viz. 'Scientific developments in independent India', 'Maths and nature' and 'Genetically modified crops and impacts' were announced. A total of 211 students participated and essays were evaluated by the panel of 16 IWSA members and winners for each topic were selected. Science day celebration was conducted on 20th February 2023 at Atomic Energy Central School-2 (AECS-2), Kalpakkam. IWSA EC members, students, teachers and principal-AECS-2 attended the program. The program was compered by Dr. Gurpreet Kaur, Joint Secretary, IWSA-K. Smt. Jemimah Ebenezer, Convener welcomed the audience and Dr. Padma S. Kumar, Co-Convener, briefed about the genesis of conducting essay writing competition. The principal AECS-2, delivered the presidential address. He appreciated IWSA's efforts to encourage the students and congratulated all the participants. Dr. N. Sangeetha, Paediatrician, DAE Hospital, Kalpakkam addressed the students about the importance of following healthy diet, exercises and how it equips them to find their path to better well-being and good academic health. Followed by the talk, Dr. B. Sasi, Secretary, announced the results of the science essay writing competition. The prizes were awarded to the winners (46 students). Winners received science books as prize and all participants received certificates.

2. Celebration of International Women's Day on 06.03.2023:

International Women's Day-2023 was celebrated by IWSA, Kalpakkam branch on 6th March, 2023 at HBB building, IGCAR, in association with Indira Gandhi Centre for Atomic Research (IGCAR), Kalpakkam. Dr. K. Ananthasivan, Director, Reprocessing Group, IGCAR, was the chief guest and the special speaker for the programme was Ms Renu Maheshwari, Financial planner and investment advisor and co-founder of Finscholarz Wealth Managers, Chennai. The celebration started with an invocation song, Tamil Thai Vazhthu. In his presidential address, Dr K. Ananthasivan talked about the important roles played by women in society and also reminded of the fact that in olden times the household finance was mostly managed by the women. He also stressed on the need for women empowerment and the way forward for achieving equal opportunities and enabling the infrastructure, financial help and freedom to set their dream and pursue towards that and attaining their goals. Ms Renu Maheshwari delivered a talk titled "Know your Money". In

her talk she stressed on the need for women to understand and participate in personal finance and family money management. How even educated and career women because of their commitments and busy with other responsibilities, sometimes tend to ignore financial matters which can lead to very difficult circumstances later in life. In order to change the present scenario of ignorance in personal finance and to initiate the interest on this, she gave possible ways to proceed as an initial step towards future prosperity. The lecture was followed by the interactive session, had lot of discussions and she cleared many doubts and queries posed by colleagues. The chief guest and special speaker were honoured with gifts and mementoes. The fun games were also organized and conducted, which included recognition of women achievers from India in different fields: science, sports and social work from their pictures. All the winners from the audience were given prizes. The women's day celebration was attended by more than 300 participants including men and women employees from all the DAE units in Kalpakkam.

Kolhapur Branch

1. Session on Women's Health and Hygiene: A two hours session covering adolescence, personal hygiene, menstrual hygiene, cervical cancer awareness and its vaccination, girl child, societal pressures was conducted for the high school girls and the NSS (National Service Scheme) camp girls, GKG college, at Padali Khurd, Kolhapur on 6th January 2023. IWSA life member Dr. Samruddhi Ingawale, Gynaecologist, was the speaker and communicated very effectively with the students and ladies present there. IWSA member Dr. Padmashree Awati welcomed everyone, Convener Mrs. Deepali Taywade Patil introduced Dr. Samruddhi and spoke on the importance of the session's topics. Deputy Sarpanch of the village gave the vote of thanks.

Outreach: 100

2. National Science Day: Introduction to Astronomy

On the occasion of Science Day, an activity on astronomy was conducted at Karmaveer Bhaurao Patil Vidyamandir, a municipal school in Kolhapur on 28th February 2023. IWSA member, Mrs. Pradnya Abhyankar (Physics teacher and amateur astronomer) explained with demonstration on a model about planetary sciences, solar system, the origin and evolution of stars, formation of galaxies, lunar and solar eclipses, and earth's environment. Students participated in this activity with lot of interest and curiosity.

Outreach: 50

3. Women's Day Celebration: On 8th March 2023, on the occasion of International Women's Day, convener, Deepali Taywade Patil conducted a session on Women & Environment & Rudiments of Gardening for the student and staff members of Rajarshi Shahu College, Kolhapur. Seventy participants attended the program.

4. World's Earth Day Celebration: On 22nd April 2023, "World Earth Day", Kolhapur branch organised a workshop on Garden Activity for kids. This involved planting in painted pots and kids enjoyed the workshop thoroughly.

5. National Seminar on Natural Resources Management & G20

A one-day national seminar on Natural Resources Management & G20 was organised by IWSA, Kolhapur branch in association with Dept. of Botany and IQAC- Vidnyan Mahavidyalaya, Sangola, Br. Balasaheb Khardekar College, Vengurla on 27th April 2023. The theme of the seminar was “Invest in our Planet”. The inaugural speech was delivered by Dr. Shyamala Bharadwaj, Vice President, IWSA. The resource persons were Dr. Manjula Deshpande, Director of Lokvikas Kendra, Shivaji University, Kolhapur, J. B. Pishte, Retired Principal, Ex Head, Geology, GKG College, Kolhapur and Mr. Satish Khade, Editor, Jalsanwad, Pune. They talked on ‘G20- Lifestyle for Environment’, “Soil of Western Maharashtra”, and “Youth in Action Mode for Water” respectively. The program was conducted on-line on Zoom platform.

Nagpur Branch

1. WISE 2023: To mark and celebrate the 40th year of IWSA, Nagpur Branch, a program, WISE 2023 (Women In Science and Entrepreneurship) was organized. The program was held on 2nd April 2023 at CSIR NEERI auditorium. Dr Atul Vaidya, Director NEERI, Dr. Vibhavari Dani, Dean (retd Nagpur Medical College), Dr. Anuradha Gadkari our founder member and our distinguished guest of Hon. Union minister Shri Nitin Gadkari were present at the inaugural function.

2. Workshop on Extraction of Bioactives: This workshop on extraction of bio actives from plants was conducted on 14th March 2023 by IWSA and Nikalas Mahila Mahavidyalaya and Shivaji Science College Nagpur. Faculty and students both participated. Included hands on training on extraction of bioactives from Rose Petals, Hibiscus, Aloe vera, Palash, Henna and Turmeric.

3. Treasure Hunt based on scientific clues for std 7-8 on 2nd January 2023 at Nikalas Mahila Mahavidyalaya. The activity was based on scientific clues. Teams were invited from Somalwar schools. The program was highly appreciated by students and teachers as it was “learn while you play” based activity. Program was attended by teachers of participating schools and IWSA members as well with a total of 60 attendees.

4. BRNS sponsored popular talks:

i) Lecture on 17th Feb. 2023 at **Shri Shivaji Education Society Amravati's Science College, Congress Nagar, Nagpur** by **Dr. Bandana Samant**, Associate Professor, PG Dept of Geology, RTM Nagpur University, Nagpur.

Topic: Earth as an evolutionary archive: tracking life through time.

Abstract: Life on the Earth evolved around 3.7 billion years ago as a single celled microscopic organism and gradually life flourished to its present form. During this long history of evolution, the Earth also witnessed changes in climate and environments, as well as five major extinction events that wiped out 80-90% of existing life. These extinction events paved the way for new and more adaptable life forms. The plants and animals preserved in the rocks play an important role in understanding the origin and evolutionary

trend. The Earth's evolutionary archives are not only a record of the past but also a key to understanding the present life on the planet. From an evolutionary perspective, the Indian subcontinent is unique because it moved from the south of the equator to the north of the equator. During this long journey, the Indian subcontinent experienced distinct climatic and environmental changes, which resulted in the origin and evolution of unique biodiversity on the subcontinent.

Outreach:80

ii) Lecture on 27th Feb. 2023 at **Nikalas Mahila Mahavidyalaya, Khamla, Nagpur** by **Dr. Rekha Shama**, Professor, UGC-Human Resource Development Centre, Rastrasant Tukodoji Maharaj Nagpur University, Nagpur.

Topic: Functional Foods and Nutraceuticals

Abstract: Globally, lifestyle behaviours- smoking, unhealthy diet and physical inactivity have increased the incidence of obesity leading to the development of chronic and noncommunicable diseases like diabetes, hypertension, cardiovascular diseases, metabolic syndrome, cancer, Alzheimer's and Parkinson's. Functional foods and nutraceuticals are the unique gifts of nature and have recently received considerable importance due to their safety, nutritional and therapeutic benefits. Functional foods contain biologically active compounds known as "Bioactive Compounds" and when these bioactive compounds are isolated or extracted, they are termed "Nutraceuticals". Nutraceuticals may improve immunity, delay ageing, prevent chronic diseases, increase life expectancy, and improve body functions.

Outreach:95

Nellore Branch

Sessions on Neurological Diseases and Brain Health: Dr. Bindu Menon conducted sessions on neurological diseases and brain health at various academic institutes for students and teachers. She conveyed the message of "Educate a Woman, You Educate a Society" in her talks.

1. 28th Jan 2023 at DRW Junior college, Gudur.
2. 11th February 2023 at Devireddy Sarada Charitable trust, Educating Women about Neurological Diseases.
3. 25th March 2023 at Aditya Degree college. Telugu Stroke mnemonic Sa Re Ga Ma Pa Da Ne Sa was educated and students took pledge to take care of their brain health.

Pune Branch

1. **Seminar on "Women Health and Nutrition":** One day seminar on Women Health and Nutrition was organized by the Indian Women Scientists' Association, Pune Branch in collaboration with the Department of Microbiology, SP Pune University on Wednesday, 8th March 2023 at the Department of Microbiology, SPPU. Dr. Angeline Jeyakumar from Interdisciplinary School of Health Sciences spoke on "Micronutrients and Women's Health: Practical Suggestions to Improve Diet" and Dr. Hemalata Kotkar from Dept. of Botany talked on Nutritional Benefits of Millets for Health and Well-being in Women. Dr. Shilpi Sharma and Dr. Rajendra Patil from Dept. of Biotechnology spoke about "Alternatives to Animal Experiments for Diabetic Research" and "Recent Advances in Nanoagrochemical for Sustainable Agriculture" respectively.

2. BRNS sponsored Popular Science Talks:

i) Lecture on 15th Feb. 2023 at Dept of Chemistry, **Haribhau V Desai College of Commerce, Arts and Science, Budhwar Peth Pune** by **Dr. Parag Adhyapak**, Senior Scientist, Centre for Materials for Electronics Technology, Panchavati, Off Pashan Road, Pune.

Topic: Innovations and Challenges in Sensing Technology

Abstract: Sensors play a crucial role in modern electronics. Different sensors like energy sensors, flow sensors, humidity sensors, gas sensors, weather prediction sensors, light sensors, temperature sensors, bio-sensors etc. are an integral part of our life. For the development of these sensors, the use of nanomaterials is inevitable in view of expected miniaturization, fast response, high sensitivity, long durability, cost effectiveness etc. Variety of nano-materials such as ceramics, oxides, sulfide, metallic nanoparticles, carbon nanotubes, graphene, organic/conducting polymers and polymer/inorganic hybrid materials have been extensively investigated and used as a sensing material to fabricate sensors for different applications. Moreover, the development in Internet of Things (IoT) has also added a new perspective in the sensing technology. The lecture provided an overview of development in the field of sensing technology.

Outreach: 100

ii) Lecture on 17th Feb. 2023 at Dept of Chemistry, **BJS's Arts, Science and Commerce College, Wagholi, Pune** by **Dr. Anupa Kumbhar**, Assoc. Prof, Dept of Chemistry, Savitribai Phule Pune University, Pune.

Topic: Role of Voltage Gated Sodium and Potassium Channels in the Development of Cardiac Arrhythmias.

Abstract: The Na⁺K⁺-ATPase pump helps in maintaining osmotic balance and membrane potential in cells where Na⁺ and K⁺ move against the concentration gradients. A rapid change in the membrane potential of a specific cell location is called action potential. The release of acetylcholine occurs when an action potential is relayed and reaches the axon terminus causing depolarization. As a result, voltage gated calcium channels open to facilitate entry of calcium ions. This allows the release of acetylcholine (ACh) into the synaptic cleft. When ACh binds to ACh receptors, sudden influx of Na⁺ ions generate action potential giving electric impulses that regulate the activities of smooth muscles and cardiac muscles. The direct and indirect effects of external factors disrupt the co-ordinated electrical activity of the heart and have been associated with life-threatening cardiac arrhythmias. This talk focuses on the structure and function of Na⁺K⁺-ATPase, ACh receptor, how action potential is generated and how external factors affect cardiac sodium, potassium and calcium ion channels in heart arrhythmias.

Outreach:70

iii) Lecture on 27th Feb. 2023 Dept of Chemistry, **MES, Abasaheb Garware College (Autonomous), Pune** by **Dr. Vinay Bhandari**, Chief Scientist, CSIR-NCL, Pune.

Topic: Developing indigenous technologies for environmental pollution control

Abstract: Cleaner environment is an essential agenda for developing countries like India. Advanced research in the area of separation science and technology is essential to increase the sustainability and for safer environment. The presentation discussed these challenges along with newer developments in technologies such as coagulation,

adsorption, and oxidation to clearly bring out utility of using fresh approach in the form of novel materials for effective pollutant removal and cavitation technology. CSIR-NCL Pune, has developed newer cavitation technology using vortex diode which is promising new alternative in wastewater treatment for the degradation of variety of dyes/ organic pollutants/ ammoniacal nitrogen. It generates no secondary waste, offers significant ease of operation and is believed to be cost effective as compared to other advanced processes. Also, a noncatalytic cavitation technology is developed which is highly efficient in the degradation of sulfur compounds. It can be used for deep desulfurization of fuels in petroleum refineries, offers significant ease of operation and is believed to be cost effective as compared to other advanced processes, including hydrodesulfurization process. The developed technologies can be effectively implemented for industrial wastewater treatment operations and for large scale deep desulfurization operations of petroleum refineries.

Outreach:100

iv) Lecture on 9th March, 2023 at Dept of Chemistry, **Modern Education Society's Nowrosjee Wadia College Pune**, by **Dr. Sudha Bhoraskar**, Former Professor, Physics Dept, SPPU, Pune.

Topic: Waste to Energy by Plasma Processing

Abstract: This lecture described the current status of waste- treatment using thermal plasma technology and installation of such a pilot plant in Savitribai Phule Pune University. Today the treatment of waste has become one of the central problems, as traditional methods used for waste management have limitations on account of shortage of space as well as due to the risk of pollution. The plasma- waste treatment has become a more prominent technology, where in valuable co-products like usable energy can be generated. The principal advantage of the plasma process is that, it has high energy densities and high temperatures (> 10,000C) enough to convert any kind of non-segregated waste materials into constituent atoms which can be reassembled into less harmful materials. Moreover, the thermal energy content from the off-gases can be used for generating electricity. It allows rapid heating rates, smaller installations and can be used for literally all kinds of solid waste like Municipal Solid Waste. The plasma arc gasification process can be therefore described as a "technologically advanced and environmentally friendly method of disposing of waste, converting it into commercially usable by-products as well as electricity.

Outreach:75

Women Achievers

1. Bhagwani Devi

Bhagwani Devi Dagar, aged 95, won three gold medals in Discus Throw at the World Masters Athletics Indoor Championship in Torun, Poland. The athlete ran 100m faster than everyone in the 90-94 age category at the 2023 World Masters Athletics Championships in Finland. Additionally, she won gold in shot put and discus throw in the 95-99 age group. She also created a national record by completing the 100-meter race in 24.74 seconds.

The nonagenarian started her athletic career only six months prior to this event. . "When she first picked up 'shot-put', at the age of 94, that was the turning point. In the last six

months, Bhagwani Devi has won three gold medals for Delhi, three gold in Chennai for national, and now recently one gold and two bronze in World Master Athletics in Finland," said Vikas Dagar, Bhagwani Devi's grandson.



Bhagwani Devi's personal life is a story of struggle as she has been through several downturns. Her husband died at the age of 29, when she was pregnant with their son. Four years later, her elder daughter died at the age of 11. In spite of her illness and bypass surgery, her determination and positive attitude is commendable. She had shared a video of herself learning to throw from an elderly competitor. "One lamp

does not lose anything by lighting another lamp. Meet my friend who often helps me to improve my game. That's the beauty of the game," she wrote.

At present she is preparing for next year's World Indoor Master Athletics, which is set to take place in Poland. Lots to learn from this nonagenarian, who had been living a simple life of a housewife all these years!

2. Prof. Vidita Vaidya

The Infosys Prize 2022 in Life Sciences was awarded to Dr. Vidita Vaidya, Professor of Neurobiology, and Chairperson, Department of Biological Sciences, Tata Institute of Fundamental Research, Mumbai, for her fundamental contributions to understanding brain mechanisms that underlie mood disorders such as anxiety and depression, including signals engaged by the neurotransmitter serotonin in causing persistent changes in behaviour induced by early life stress and the role of serotonin in energy regulation in brain cells.

Mental health is fundamental for human well-being and productivity. Our mental health is affected by mood disorders such as anxiety and depression, but the mechanisms that alter brain function and cause these disorders are not well understood. In humans, early life stress can lead to anxiety and depression in adulthood. The focus of Prof. Vidita Vaidya's work is to understand the molecular and cellular mechanisms that contribute to mood disorders, with an emphasis on the function of serotonin, the neurotransmitter associated most closely with regulation of mood.



The jury citation says: "Prof. Vidita Vaidya has made important contributions to understanding the neurobiology of mood disorders. Such disorders crucially affect mental health, but the underlying brain mechanisms remain poorly understood. Prof. Vaidya's work has focused on

mechanisms downstream of serotonin, the most important neurotransmitter linked to mood disorders. She has provided evidence for persistent alterations in the brain in animal models of depression, mainly arising from early life stress, caused by an imbalance between different serotonin receptors and their intracellular signals which ultimately leads to long-lasting behavioural changes.

Prof. Vaidya's laboratory has described adaptive changes in brain structure and function that arise in response to chronic antidepressant treatments, and a novel mechanism of serotonin action through enhancing mitochondria production and cellular energy-regulating pathways. These findings can lead to new therapeutic strategies for a range of psychiatric and other brain disorders." She has shown that the effectiveness of antidepressants in altering behaviour may relate to the growth of new neurons and processes together with changes in gene expression in critical brain regions such as the hippocampus.

Prof. Vidita Vaidya studied in St. Xaviers College, Mumbai, received her Ph.D. from Yale University in 1998 and did postdoctoral research at the Karolinska Institute and Oxford University before joining TIFR in 2000 as a principal investigator. She has been a Wellcome Trust Overseas Senior Research Fellow and an associate of the Indian Academy of Sciences from 2000 to 2005. She is an elected fellow of the Indian National Science Academy, the Indian Academy of Sciences and the National Academy of Sciences, India. She has received the National Bioscientist Award (2012), Shanti Swarup Bhatnagar Award (2015), the J.C. Bose Fellowship from SERB, Govt. of India (2021), and a Nature award for excellence in mentoring (2019). Prof. Vaidya's record of scientific leadership includes serving on the boards and scientific advisory committees of several institutes including the National Centre for Biological Sciences and the National Brain Research Centre. She serves on the Council of Scientists, Human Frontiers Science Program, and is a reviewing editor for *eLife* and senior editor for the *European Journal of Neuroscience*.

Ref: <https://www.infosysprize.org/laureates/2022/vidita-vidya.html>

<https://theprint.in/feature/vidita-vidya-the-neuroscientist-helping-us-understand-how-brain-functions-under-stress/1318246/>

Millet: Superfood for Food Security

Millets are important crops of semi-arid tropics of Asia and Africa and majority of them belong to the family Panicaceae, although a few millets belong to other taxa as well. Millets are small seeded nutrition dense grains which are highly drought tolerant and can grow under extreme conditions such as high temperature and nutrition deficient soil. Millets are traditional staple food of dryland region and are known as nutri-cereals because of high nutrient content including proteins, essential fatty acids, dietary fibre, B-vitamins and minerals such as zinc, iron, calcium, potassium and magnesium.

The year 2023 has been declared as a year of millets by the United Nations since they are recognized as super crops which can be grown under changing climatic conditions. Government of India is celebrating International Year of Millets to make it a people's movement so that millet products are accepted globally. Millets are gluten free, can lower LDF, prevent type 2 diabetes, lowers blood pressure, protect against heart disease and detoxify the body. The different millets include sorghum, pearl millet, finger millet, fox tail

millet, proso millet, kodo millet, little millet, barnyard millet, brown top millet etc. Besides being used as a human food, they can be used as fodder for animal feed and sweet sorghum can be used for production of alcoholic beverages and biodiesel.

Millets were domesticated in East Asia and Africa 3000 to 10000 years back and domesticated varieties gradually spread to other parts of the world. In India, research on millets is being carried out at International Crop Research Institute for Semi-Arid Tropics (ICRISAT) and ICAR – Indian Institute of Millet Research in Telangana. Using conventional plant breeding methods like selection and in some cases, hybridization have been attempted to develop new varieties of millets. High grain yield combined with disease resistance, resistance to lodging, increased seed size and better palatability are the main targets for millet improvement.

When the climate is changing and the population is increasing, we have to produce more food with less cultivable land and less water with changing climatic conditions like extreme drought, high temperature, salinity, soil deficiency, metal stress etc. The millets are easy to grow, require less water, can be grown in marginalized land and are climate resilient. There is a surge in interest and millets are recognized as super crops of 21st century due to its gluten free nature and high fibre content and suitability for growing in a planet under changing climatic conditions, where rice and wheat may find difficulty in growing. Molecular tools like genomics, bioinformatics, plant biotechnology and gene editing can be used for improvement of present-day millets. Value addition, processing and novel recipe development and supporting startups are the need of the day. Millets are the hope for feeding the world.

(Dr. Susan Eapen)

Millet Queen of India – LAHARI BAI

A 27-year-old woman Lahari Bai from Baigu tribal community, Dindori, Madhya Pradesh has been conserving about 50 varieties of millet seeds earning the name “Millet Queen of India”.



She was determined to make millets regain the lost glory and transformed her home into a “Millet Seed Bank” where she collected seeds of about 50 varieties of millets in earthen containers. She also distributes these seeds to farmers and collect a part of the produce to be preserved in her home-made seed bank. Her unique mission has attracted Prime Minister Modi’s attention, who named her “Millet Queen”.

Millets have high nutritional value in comparison with rice and wheat and this year being the year of millets, people are getting familiar with these crops. The local varieties are getting lost over the years. It is essential to maintain biodiversity and her community enjoys a long healthy life and wanted to maintain the biodiversity of these safe crops. She said these millets can work against

nutritional deficiency, especially for women and children. Lahari Bai who initiated her seed bank in her house collected seeds of sorghum, pearl millet, ragi, foxtail millet, proso millet, barnyard millet, kodo millet and other millets. She has realised that the members of her community should enjoy a long and healthy life by consumption of millets. She wanted to maintain the biodiversity of millets and therefore initiated the millets seed bank.

(Dr. Susan Eapen)

Ref: news9live.com/india/meet-citizen-scientist-and-indias-millet-queen-lahari-bai-a-baiga-tribal-from-mps-dindori-au40-2056050

IWSA Members Honored

Prof. Jyotirmayee Mohanty – IUPAC award under the Distinguished Women in Chemistry or Chemical Engineering category



Professor Jyotirmayee Mohanty, senior scientist at Bhabha Atomic Research Centre, Mumbai, received the IUPAC 2023 award under the Distinguished Women in Chemistry or Chemical Engineering category. She is the first Indian woman scientist to receive the award in this category. The IUPAC 2023 award was announced on February 11 to celebrate International Day of Women and Girls in Science and 12 persons including Mohanty were nominated for the award in this category.

The awards program, initiated as part of the 2011 International Year of Chemistry celebrations, was created to acknowledge and promote the work of women chemists/chemical engineers worldwide. Each year since 2011, the award has gained more attention in the global community. As per IUPAC, these 12 awardees have been selected based on excellence in basic or applied research, distinguished accomplishments in teaching or education, or demonstrated leadership or managerial excellence in the chemical sciences.

Dr. Jyotirmayee Mohanty obtained her M. Sc. in Chemistry from Utkal University, Odisha in 1992 and joined Bhabha Atomic Research Centre, Mumbai, India, as Scientific Officer in 1994 after one-year advanced orientation course conducted by the institute. After her Ph.D. from the University of Mumbai in 2002, she carried out her postdoctoral research at Max-Planck Institute for Biophysical Chemistry (MPIBPC), Göttingen and Jacobs University Bremen (JUB), Bremen, Germany, 2002-2004. She visited Jacobs University Bremen under AvH Fellowship during Nov. 2013-Jan 2014. Her current research interests focus on the dynamics of noncovalent supramolecular/biomolecular assemblies, tuning their molecular properties and exploring their functional activities towards various

applications such as on-off sensors, catalysts for H₂ generation, aqueous dye lasers, ^{99m}Tc generator bed, anti-cancer/anti-amyloidosis/antibacterial agents, G- quadruplex DNA, etc. In her career, Dr. Mohanty has come up with a number of publications in high impact international journals like Angew. Chem. Int. Ed., J. Am. Chem. Soc., ACS Appl. Mater & Interface, Chem. Commun., etc. including two Patents and six Book Chapters which have attracted more than 5670 citations with h-index 39 (Google Scholar). In addition to IUPAC award, her research contributions have been recognized in various national and international fora, such as Fellow of the National Academy of Sciences (FNASc)- 2014, Fellow of the Royal Society of Chemistry (FRSC), Homi Bhabha Science & Technology Award from DAE (2019), Asian-Oceanian Photochemistry Association (APA) Prize-2010, Bronze medal from CRSI, Distinguished Lectureship Award-2009 from the Japan Chemical Society, Humboldt Fellowship for Experienced Researchers, Samanta Chandra Sekhar Award-2011 from Odisha Bigyan Academy, etc.

Dr. Nupur Bahadur featured in “She Is- Water Sheros” Book



Dr. Nupur Bahadur, an IWSA member of Delhi branch is Associate Director of the Environment & Waste Management Division of The Energy and Resources Institute (TERI). She is featured amongst 10 Indian Water Sheros in the third book in the series “She Is-“, showcasing women’s leadership in diverse fields – (sustainability, STEAM and water) published by the Office of the Principal Scientific Advisor to Govt of India and Red Dot Foundation. Likewise Canadian Govt has chosen 19 Canadian Water Sheros. A book launch with Stories of all 29 selected Women Awardees took place on 23 March in an event in the UN Water Conference at New York and in

India at the Canadian Consulate at Mumbai.

Dr Nupur Bahadur is the inventor of TERI's TADOX® (TERI Advanced Oxidation) Technology to treat municipal and industrial wastewater, Dr Bahadur has been associated with TERI since 2017.

In addition to her capacity as an Associate Director at TERI, Dr Bahadur is also an Adjunct Faculty at the TERI School of Advanced Studies and serves as the Vice-Chairperson, IWA-India. She is also a Member of the Consultative Group of Experts Committee, Central Pollution Control Board, MoEFCC, Gol for the preparation of BREF/COINDS Document for Textile Sector in India.

She obtained Ph.D. in Chemistry from IIT Roorkee and her 23 years of work experience involves R&D, teaching, policy, capacity building & technopreneur roles with specialization in Advanced Oxidation Nanotechnology for Wastewater Treatment, ZLD and Water Reuse.

IWSA-- BRNS Popular Science Lectures in Schools and Colleges



at Mar Athanasios College
Kothamangalam Kerala 1st March 2023



At Patkar Varde College, Mumbai
27th February 2023



ICL School, Vashi, Mumbai on 30th Jan



At VEC college of Engineering, Mumbai on
13th March 2023




At VIVA college, Virar, Mumbai
18th March 2023




Pillai's Global Academy on 12th January


IWSA – BRNS “Science and Our Life” Series of Webinars

 INDIAN WOMEN SCIENTISTS' ASSOCIATION
iwsa.net
34th Talk under IWSA's Science And Our Life Lecture Series
supported by
Board of Research in Nuclear Sciences-DAE

Bringing back to the focus – Is Tuberculosis a public health problem in India?



Speaker-
Dr. Raghavan Parthasarathy MD, DNB
National consultant,
“Monitoring and Evaluation” portfolio of
National TB Elimination Programme, India
WHO Country Office



On- 26th Feb. '23 On Zoom –
At - 5pm Meeting ID- 814 1044 5009
Passcode-SAOL@IWSA

 INDIAN WOMEN SCIENTISTS' ASSOCIATION
iwsa.net
35th Talk under IWSA's Science And Our Life Lecture Series
supported by
Board of Research in Nuclear Sciences-DAE

How the structure of the bird bill influences its function



Speaker-
Dr. Anand Krishnan
Assistant Professor
IISER Bhopal





On- 27th Mar. '23 On Zoom –
At - 5pm Meeting ID-857 6079 9651
Passcode-SAOL@IWSA

IWSA Scholarship Distribution Function (4th February 2023)



IWSA Internship Program
SIES College (10th January to 9th February 2023)



IWSA Science Exhibition (10th & 11th February 2023)



Learning Garden Activities



Visit by students (KBP College) on 26th February Millet Recipe Competition Visit by students (Acharya College) on 26th February

IWSA's Piroshja Godrej Foundation Library



Tree Library: Floor games painting by students of Tilak Architectural College (5th March 2023)

Nursery and ECCE Activities



Shikshan Setu participants with resource persons (27th March 2023)



Nursery children making Gudi (22nd March 2023)



Nursery children in Compter Centre (18th March 2023)

Kids Summer Lit Festival - 2023 (11th March 2023)



Hostel Day Celebrations (7th January 2023)



Health Care Centre



Cancer Detection Camp on 25th March 2023

Activities from our branches

Amravati



IWSA - BRNS talk on snake bite on 11th March 2023

Baroda



BRSGIS Workshop (3rd – 11th March 2023)



AISDA Workshop (31st March 2023)

Bengaluru



**Talk: Green the Red Revolution
(3rd March 2023)**



**Workshop for nonteaching staff
(28th March 2023)**

Hyderabad Branch



Sahaja Utpada- Exhibition cum Sale of Organic Products- Kisan Diwas, 13th January 2023



Science Day Celebration on 25th February



Women's Day Celebration on 10th March

Kalpakkam



Science Day Celebration – Essay Competition and Prize Distribution on 20th February

Kolhapur Branch



Session on Adolescence, Personal Hygiene, Menstrual Hygiene, Cervical cancer awareness & it's vaccination, girl child, societal pressures on 6th January



Earth Day Celebration on 22nd April



Women's Day Celebration on 8th March



Kolhapur branch Science Day celebration on 28th February

Nagpur Branch



Celebration of 40th Anniversary on 2nd April



**Nikalas Mahila Mahavidyalaya
27th February**

BRNS talks

**Shri Shivaji Society Amravati's Science College
17th February**



Nagpur Branch - Workshop on extraction of bio actives on 14th March

Nellore

Sessions on Neurological Diseases and Brain Health



Devireddy Sarada Charitable trust.
11th February 2023



DRW Junior College
28th January 2023



At DRW.junior college, Gudur. 28th January 2023

Pune



Celebration of International Women's Day 8th March 2023

IWSA-BRNS talks (Pune)



at M ES Nowrosjee Wadia College (Autonomous) on 9th March 2023



Desai College (17th February)



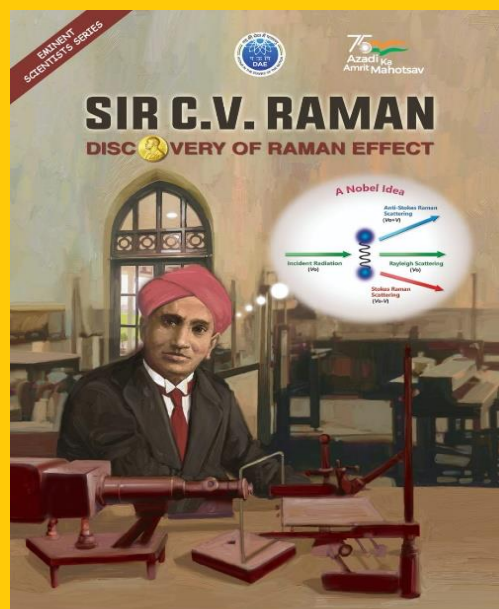
Wagholi College (15th February)



MES Abasaheb Garware College (Autonomous) on 27th February

BOOK POST

Regd. No.N.R.24208/74
ISSN 0972-6195



Science Day 2023 – Theme released by DST and book published by Public Awareness Division, DAE

To

From
IWSA Head Office
Plot No.20, Sector 10A
Dr. Mar Theophilus Road, Vashi
Navi Mumbai: 400703
Tel: 27661806,
Email: iwsahq@gmail.com
Website: www.iwsa.net

Published by Dr. Rita Mukhopadhyaya, President, IWSA, Plot No.20, Sector 10A,Vashi, Navi Mumbai 400703.
Editor Dr. Shyamala Bharadwaj.