Newsletter
2021

Archana Sharma Foundation of Calcutta
(ASFC)
Department of Botany, University of Calcutta

FROM THE PRESIDENT's DESK

A scary year 2020 has gone leaving behind Covid-19 pandemic situation; another year of uncertainty began with little hope of availability of specific medicine and indigenous vaccines. In this continuing, gloomy pandemic situation the only ray of hope has cropped up with the discovery of some effective vaccines against the different strains of the virus, SARS-CoV-2. During such a difficult time, I would like to thank all the members of ASFC, especially the members of the Governing Body and all the Editorial Board members for staying beside the Foundation and actively participating in all the academic and social activities during such a difficult time, without failing in their own respective duties and responsibilities.

During the Covid-19 pandemic situation we have seen the evolution of the science surrounding the SARS-CoV-2 virus. Despite efforts, there is still limited evidence available on a successful potent inhibitor with a low toxicity profile that can aid in the prevention and/or treatment of COVID-19. It is amazing to see how in a very short time we have beenable to learn a lot more about the virus, its different mutant forms; and how science is helping to cope up

with the situation by developing different effective vaccines.

Last year was by no means an easy year. Executing the objectives of the Foundation was extremely challenging to everyone. Over the year we have been working for the journal 'The Nucleus' and we are also looking forward and trying our best to uplift the position of the journal in the near future. We appreciate the time Editorial Board members took away from their personal life and research to perform the duties of the Handling Editors to submit reviews on articles submitted to the journal "The Nucleus". With our combine and sincere efforts publication of the Journal Nucleus is going on steadily. The print version of three issues of volume 63 was published within the stipulated time, which includes a special theme issue (number 3) on "Omics of neglected and underutilized crop species", Edited by Dr. Manoj Prasad.

It is a pleasure to serve the Foundation and we are almost ready to launch the Foundation's website, our major window to the academic world. We are striving to make the website more informative and more attractive. At the same time, we have initiated digitization of old volumes of the journal starting from the year 1958 to 2009.

Keeping our focus on the objectives of the society, I am happy to mention that we were successful in organizing webinars and the foundation even in such new normal situation had extended financial help to the less privileged, needy girl students of Sri Sarada Math, Dakhineswar in their academic activities.

In reverence to our mentors the 3rd Archana Sharma and A K Sharma Memorial Oration was organized. The lecture was on "Covid-19 and its population based differential effects", delivered by Prof. Dhrubajyoti Chattopadhyay, Vice-Chancellor, Sister Nivedita University, Kolkata, on 10th December 2020 in virtual mode.

We have sincerely tried our best to project our activities in this Newsletter and from next year onwards you will get all information about ASFC in the Website itself and hereby seeking your active interest and support in fulfilling the future endeavours of the foundation.

Amita Pal
President

ACTIVITIES OF THE FOUNDATION

The Archana Sharma Foundation of Calcutta was successful in organizing a national webinar on "Emerging Trends in Plant Research" in collaboration with the Department of Botany, University of Calcutta held on 27th October 2020. The speakers were Dr. Utpal Nath, Associate Professor, Department of Microbiology and Cell Biology, Indian Institute of Science, Bengaluru; Dr. Kutubuddin Ali Mollah, Scientist, Indian Council of Agricultural Research – National Rice Research Institute, Cuttack, Odisha and Dr. Jitender Giri, Staff Scientist, National Institute of Plant Genome Research, New Delhi.

Dr. Nath delivered lecture on the topic - **Growing to a shape: Genetic control of leaf Development**. He talked about the important questions in developmental biology involving the growth of organs and the evolvement of shapes during growth. A few aspects of these shape parameters were discussed during the talk. He demonstrated this by using leaf as the model organ and molecular genetics as an approach.

Dr. Kutubuddin Molla discussed his ongoing work on crop improvement by using the most recent cutting -edge technology of CRISPR-Cas-mediated mutagenesis. The title of his talk was- **Precise genome engineering with CRISPER-Cas- base editing**. He presented his research work developed on plant base editing (BE)- and ABE-binary vector systems for simultaneous base editing at multiple genomic loci in the rice genome. His team was successful in correcting a premature stop codon with BE to develop disease resistance in rice plants. Moreover, the lecture also provided the participants (students in particular) with the basics of base editing technologies, available tools to introduce point mutations, and their potential applications in research.

Dr. Jitender Giri touched upon a very important area of plant research in his lecture entitled- **Targeting Roots for Sustainable Agriculture**. His lecture covered the present scenario of agriculture, which uses modern high yielding crop varieties that is highly input-intensive with high application of chemical fertilizers for successful crop production. He stressed upon the fact that in future crop production has to be less input-intensive with less application of expensive fertilizers like phosphate. To achieve this he has focused on improving root architecture with functional changes in acquisition of phosphate -- a key mineral for crop production, from the soil. Dr. Giri and his team have revealed a promising role of secretory acid phosphatases in enhancing the availability of P which is otherwise poorly available in the soil for root uptake. In addition, he elaborated the mechanistic details of root growth regulation, the role of auxin biosynthesis and important role of an actin-binding protein (OsRMD in transport of external P in rice roots that could help achieving sustainable agriculture.

The webinar was successful. We had registered participants (593) that included students, teachers and scholars from the Universities of Kashmir, South Sikkim, Thiruvananthapuram, Churu and other Research Institutes of repute. The participants were enriched by the lectures delivered by the eminent speakers and had the opportunity to interact with them. This has helped the young minds to inculcate the knowledge acquired during the deliberations. A number of participants sent encouraging feedback and certificates for participation were handed over to them.

The third Oration in the joint names of Late Professors Archana Sharma and A.K. Sharma was delivered on-line (Zoom platform) on 10th December 2020 by Prof. Dhrubajyoti Chattopadhyay, FNA(Sc), Vice-Chancellor of Sister Nivedita University, Kolkata. The title of his lecture was "**COVID-19 and its population based effects**". This was organized in collaboration with the Department of Botany, University of Calcutta and Dr. Maumita Bandyopadhyay, Department of Botany, CU, coordinated the event as Moderator. The audience included teachers, research scholars and students from different Universities and Institutions in and around Kolkata.

Professor Dhrubajyoti Chattopadhyay had selected a topic which is very important and relevant in the COVID-19 pandemic circumstances. Corona virus disease 2019 (COVID-19) is caused by Severe Acute Respiratory Syndrome- Coronavirus 2 also called SARS-CoV-2 that starts its journey in the nose/mouth or eyes and travels down to the alveoli in lungs. It can injure other organs like heart and blood vessels,brain, eyes, nose, liver, kidneys and intestines.

His lecture took us through a journey detailing the origin of the virus, the nuances of the infection, putative association between severe COVID-19 and the indicated pre-existing chronic diseases. He talked on the clinical features of the SARS-CoV-2 infections and discussed the clinical symptoms at different stages of the viral response and the potential therapies that are being carried all over the world. Interestingly he showed how COVID-19 discriminates age, gender, immune system fitness, preexisting diseases and epigenetic factors. Infection with corona viruses induces changes in the basal state of hostchromatin and the immune response is extensively regulated by specific epigenetic marks, such as chromatin remodeling, histone modification, DNA, and RNA methylation. Age-related alterations to the host epigenome might affect the adaptive immune response, hindering viral defenses and epigenetic dysregulation of the immune system and of the renin-angiotensin system (RAS) may increase fatality risk. Individuals with co-morbidities such as cardiovascular disease, diabetes, obesity and COPD, are at greater risk for COVID-19 fatality. Conversely, individuals who live healthy lifestyles and consume geroprotectors such as metformin, resveratrol and NAD+ boosters may have a decreased risk of fatality. Finally, Professor Chattopadhyay cited the report published in the journal Nature by Hugo Zeburg andSvante Paabo in 2020 that identified a gene cluster on chromosome 3 as a risk locus for respiratory failure after infection with SARS-CoV-2 inherited from Neanderthals and is carried by around 50% of people in south Asia and around 16% of people in Europe.

As a token of our appreciation a memento was handed to him at his office by the Vice-President Dr. Anita Mukherjee and Assistant Secretary Dr. Maumita Bandyopadhyay.

Photographs of the events

Prepared by Dr. Anita Mukherjee, Vice president (ASFC)