

WELCOME TO OUR

MBUST Insights

Contributors of this Newsletter Issue:

Dr. Sarbesh Das Dangol, Dr. Anupama Shrestha, Dr. Sabina Shrestha and students

2025 In Vitro Biology Meeting

SIVB meeting, workshops, and oral and poster presentations

By Dr. Sarbesh Das Dangol

It is the month of June, and a long vacation in the USA, and many scientists from the USA and around the world are meeting together in different cities to participate in international conferences. Like every year in June, the Society for In Vitro Biology (SIVB), USA, holds an annual conference to gather together *in vitro* biology scientists from the USA and globally. On Friday, June 6, 2025, Dr. Sarbesh Das Dangol like every year from MBUST, and Dr. Jarina Joshi from the Central Department of Biotechnology, Tribhuvan University, for the very first time, participated and volunteered at the SIVB meeting (June 7-10, 2025). The two helped the SIVB team with the final preparation for the formal meeting at the registration desk, participated at the SIVB and PlantGENE workshops, listened to the presentations, delivered oral and poster presentations, met familiar and new scientists, volunteered at the registration desk as well as Audio/Visual (AV) sessions, and participated in the SIVB business meetings.



Glimpses of the SIVB conference (Left), Dr. Sarbesh pictured with SIVB business office team (Middle), and oral presentation of Dr. Sarbesh (Right)

On Saturday, June 7, 2025, the meeting began at 7:00 AM and lasted until 10:00 PM. PlantGENE organized a plant workshop, "Fundamentals of Modular Cloning". This was followed by the panel discussion entitled "The role of regulations on the development of and stewardship of transgenic and edited plants and animals," which brought together experts in the field of plant and animal biotech from government regulatory agencies, industry, and academia. Dr. Sarbesh volunteered for AV in this session. The moderator was Ray Shillito from Shillito and Associates. The panelists were: John Cordts from Cordts Consulting LLC, Wayne Parrott from the University of Georgia, Nicole Juba from Biotechnology Innovation Organization, and Alison Van Eenennaam from the University of California – Davis. The panel discussion focused on what scientists should be aware of when doing research, especially with the genome editing techniques in the field and experimenting outside the lab. The panelists discussed the regulatory aspects, challenges faced by the scientists, and ways to communicate with the public to build strong cases in favor of genome editing technologies.

Then, a plant workshop entitled "Optimizing plant tissue culture media formulation: modern problems require modern solutions" was held. The use of AI tools was the focus of the discussion on optimizing plant tissue culture formulation.

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Sunday, June 8, 2025

8 AM-10 AM: "Biotechnology approaches for animal and crop improvement and environmental risk assessment of genetically engineered organisms"

10:30 AM-12:30 PM: Volunteered at the AV session- "Advances in plant and animal cellular agriculture for sustainable production", and parallelly attended "The power of new breeding technologies (NBT) in trait discovery for regenerative agriculture"

3:15 PM to 4:00 PM: "2025 In Vitro Biology meeting opening ceremony"

4:00 PM to 5:30 PM- Registration Desk

7:30 PM to 9:30 PM: "Student workshop- synthetic biology- bottom-up/top-down molecular engineering of unique biosystems"



Poster presentation of Dr. Sarbesh (Left), glimpses from the workshop

Monday June 9, 2025

7:00 AM to 8:00 AM- Plant biotechnology program planning committee meeting

8:00 AM to 10:00 AM- Michael E. Horn emerging technologies symposium

10:30 PM to 12:30 PM- Innovating tools of *in vitro* biology to gain new insights and meet challenges of today and tomorrow

1:30 PM-2:30 PM: Volunteered at the AV session "Innovations in plant genome editing and transformation technologies" and delivered oral and poster presentations on "Genetic transformation and genome editing of local rice cultivars of Nepal"

2:30 PM to 3:30 PM: Attended the poster session of our poster, and interacted with visitors to our poster

3:30 PM- 5:30 PM: Volunteered at AV session "Molecular mechanisms for genotype-independent plant regeneration and gene editing"

5:00 PM-6:00 PM: Volunteered at the AV session "Signaling molecules: From cell-cell communication to aging"

6:00 PM-7:30 PM: Plant biotechnology section business meeting



Interactions with different scientists at the conference

Tuesday, June 10, 2025:

7:00 AM-10:00 AM- Registration desk

10:30 AM- 12:30 AM- Reshaping African research opportunities for genome editing through local scientific leadership and investments

12:30 PM- 1:30 PM: Announcement of the Hampton Roads silent auction winners

1:30-2:30 PM: Volunteered at the AV session "Optimizing plant biotechnology: From gene editing to AI-driven innovation", also oral presentation and poster presentation on "Prevalence and identification of rice blast disease in Nepal: A study on affected cultivars and pathogenic Variability"

2:30 PM-3:30 PM: Poster session of our poster, and interacted with the visitors of our poster

3:30 PM-5:00 PM: Tools and technologies for transformation

5:00 PM- 5:50 PM- SIVB Business Meeting

USA Visit

A VISIT TO DIFFERENT UNIVERSITIES OF USA

By Dr. Sarbesh Das Dangol

Dr. Sarbesh Das Dangol (MBUST) and Dr. Jarina Joshi from the Central Department of Biotechnology, Tribhuvan University, visited different labs at the university and presented a seminar related to the two grants received from the Ministry of Education, Science and Technology (MoEST), viz. rice/millet project under PI Dr. Sarbesh and co-PI Dr. Jarina, and kefir project under the PI Dr. Jarina and co-PI Dr. Sarbesh. The researchers discussed the potential collaborative opportunities with the scientists at the University of Maryland. The scientists gave us a tour of the university and walked us into the plant tissue culture and greenhouse facility.



University of Maryland

The duo then visited the United States Department of Agriculture (USDA), and met the scientists to discuss the ongoing MoEST project work, briefed on the results and works ongoing at MBUST and TU for feedback and collaborative opportunities. The USDA had an impressive greenhouse facility with automated sensors for real-time monitoring of plant crops.



United States Department of Agriculture

The two scientists then moved to Houston. At University of Houston, they discussed with the academicians working on different crops, and observed laboratories and in-lab miniature greenhouses. The next day, the duo met the esteemed scientists in the City of Houston. They showed the different instruments required for accurate measurement of elements, ions, and compounds found in the labs. The visit gave insights into modern instruments to accurately measure components of interest in kefir, rice, and millet crops.



University of Houston

At Texas Southern University, Dr. Jarina and Dr. Sarbesh met the faculty members to discuss the ongoing works at MBUST, TU and the ongoing MoEST project, and observed the greenhouse facility which is combined with the building infrastructure.



Texas Southern University

Cultivating a Greener Future

MBUST HOSTS TWO-DAY BIOFERTILIZER AND BIOPESTICIDE TRAINING

By Dr. Anupama Shrestha

Thaha-9, Makwanpur – Madan Bhandari University of Science and Technology (MBUST) successfully conducted a two-day comprehensive training program on Biofertilizer and Biopesticide Preparation on June 11th and 12th, 2025. Held at the MBUST Hall, the initiative aimed to empower participants with practical knowledge and skills in producing and utilizing organic inputs, thereby fostering sustainable and environmentally friendly agricultural practices in the region. The program covered diverse topics such as Community Supported Agriculture, Vermicompost Preparation, Composting and the production of Jhol Mol biopesticide from local plants, emphasizing the benefits of biofertilizers and the sustainable use of forest biomass. Facilitated by experts like Asst. Prof. Dr. Sabin Basi, Dr. Aananda Shova Tamrakar, Asst. Prof. Dr. Anupama Shrestha, and Er. Arun Lama, the training combined theoretical sessions with hands-on demonstrations, fostering knowledge exchange and promoting the adoption of organic farming techniques.

MBUST Shines at ICT Day 2025

HONORED WITH LETTER OF APPRECIATION FROM MOCIT

By Aakriti Poudel

Kathmandu, June 2025– Madan Bhandari University of Science and Technology (MBUST) proudly participated in the ICT Day 2025 celebrations organized by the Ministry of Communication and Information Technology (MoCIT). This prestigious event brought together innovators, technologists, and academic institutions from across Nepal to highlight the nation's progress in digital transformation and ICT development. MBUST's faculty and students had the distinct honor of being recognized for their meaningful contributions to the field. A Letter of Appreciation was awarded by Hon'ble Minister Prithvi Subba Gurung, acknowledging MBUST's dedication to promoting digital innovation and academic engagement in the ICT sector. The MBUST delegation included our student Mr. Dhana Krishna Acharya and distinguished faculty members Dr. Sabin Basi, Dr. Anupama Shrestha, and Dr. Ritu Raj Lamsal. The team showcased an innovative project titled: "Promotion of Organic Agriculture through ICT." This project demonstrated how digital tools and information systems can empower organic farming practices, enhance market access, and support sustainable agricultural development in Nepal. The recognition by MoCIT reaffirms MBUST's ongoing mission to integrate technology with sustainable development and to contribute to national digital goals through impactful research and innovation. MBUST extends heartfelt gratitude to the Ministry for this recognition and remains committed to fostering a culture of innovation, collaboration, and community service through technological education and outreach.



Glimpses of the event

In Search of Mushrooms

A FORAGER'S REFLECTION ON TIMING AND TERRAIN

By Suraj Chaudhary, Saugat R.C., Nitesh Khatiwada, Prabin B.C., Srijana Dang, Nawaraj Pandey, Pratistha Maharjan, Nalisha Rijal, Tripti Shrestha and Atmaz Kumar Shrestha

From April to June of 2025, we explored the forests of Chitlang, Kavre, and Sindhupalchowk as part of our research at the Mushroom Lab of MBUST. Our goal: to better understand the seasonal and regional rhythms of Nepal's wild fungi.



Photo Credit: Suraj Chaudhary and Nitesh Khatiwada

Fig: Diverse mushroom species gathered during field sampling



In Chitlang, frequent visits showed us how rapidly mushrooms appear and vanish. One week the forest floor was alive with fungi; the next, it was bare. Shiitake (Mirge Chyau) is a vivid example, it appeared during early monsoon but disappeared within days.

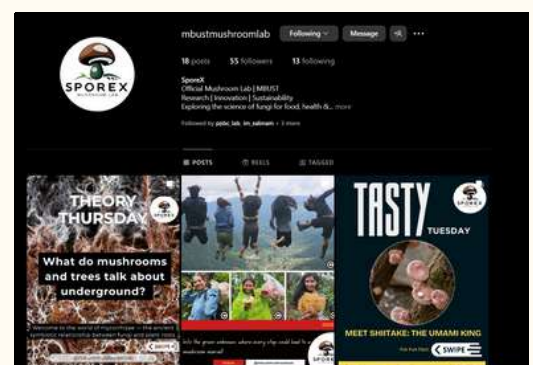
In Sindhupalchowk, we searched for morels after hearing reports from west Nepal, only to learn they fruit later in that region, a reminder that mushroom timing is not just species-specific, but location-specific.

Kavre revealed yet another forest rhythm, reinforcing how ecology, climate, and timing are deeply connected.

Kavre revealed yet another forest rhythm, reinforcing how ecology, climate, and timing are deeply connected.

Foraging is more than collection, it's about observation, respect, and understanding nature's subtle signals.

Follow our journey on Instagram:



We share field updates, mushroom IDs, and insights from the forest, **one spore at a time.**

Innovating Drug Discovery

HANDS-ON WORKSHOP ON COMPUTATIONAL METHODS AT MBUST

Dr. Sabina Shrestha

From June 26 to 27, Forest Biomaterials Science and Engineering Program, Madan Bhandari University of Science and Technology (MBUST) hosted an intensive Workshop on Computational Methods in Drug Design, focusing on techniques such as Molecular Docking, Machine Learning, and Protocol Validation. Funded by the Ministry of Education, Science and Technology, the workshop aimed to equip students, interns, and faculty members across various programs with practical skills essential for modern drug discovery.

The event commenced with an inspiring introductory remark by Dr. Kirti Kusum Joshi, Director of the Institute of Applied Science, highlighting the growing importance of computational tools in pharmaceutical research. The first presentation was delivered by Dr. Bishnu Marasini from the Nepal Health Research Council gave key note address on as modern scientific approach in drug discovery, setting a strong scientific foundation for the sessions that followed.

Dr. Jhashanath Adhikari Subin, a Post-doctoral Fellow at MBUST and the workshop's lead resource person, guided participants in hands-on exercises that bridged theoretical knowledge with real-world applications. The workshop fostered an interactive learning environment, enabling attendees to apply molecular docking techniques, machine learning algorithms, and validate computational protocols effectively.

The two-day event concluded with a certificate distribution ceremony, recognizing the dedication and achievements of all participants. This workshop marks a significant step toward strengthening MBUST's role in advancing computational drug design and nurturing the next generation of researchers in Nepal.



Dr. Kirti Kusum Joshi, Director of the Institute of Applied Science, highlighting the growing importance of computational tools in pharmaceutical research



Workshop participants interactions with Dr. Jhashanath Adhikari Subin



Dr. Bishnu Marasini answering queries of participants



Dr. Bishnu Marasini presenting on computational and simulation as modern scientific approach in drug discovery

A Blooming Breakthrough

ORCHIDS GROWN IN SOIL AT OUR GREENHOUSE!

Saugat R.C., Ankita Nepal, and Asmita Rai

We are excited to share a unique achievement from our university greenhouse!

As part of a small experimental initiative, Ms. Ankita Nepal, a Master's student in Organic Agriculture, with the dedicated assistance of Junior Technical Assistant Ms. Asmita Rai, has successfully cultivated orchids in soil, an uncommon but inspiring success.



Ms. Ankita Nepal and Ms. Asmita Rai attending to the orchids planted outside the greenhouse.

Orchids are typically known as epiphytes, meaning they naturally grow on the bark of trees, using them only for support, not for nutrients. Growing them in soil presents several challenges, but with careful observation and technique, this experiment has proven it possible. The orchids are now thriving along the outer edges of our university greenhouse, adding a vibrant splash of color and curiosity to the landscape.

We warmly invite you to visit and experience the beauty of these remarkable blooms. Come see how innovation and care in organic agriculture are helping us grow beyond expectations literally!

Harnessing Natural Colorants

A SEMINAR ON POTENTIAL NATURAL FOOD COLORANT

By Dr. Sabina Shrestha

A seminar was held on 25 June 2025 in Madan Bhandari University of Science and Technology (MBUST) to disseminate research findings on harnessing natural colorants from plants native to Chitlang. The event was funded by the Ministry of Education, Science and Technology and hosted by Dr. Sudip Pandey. The seminar aimed to highlight both scientific research and community perspectives on the sustainable use of native plant resources for food and conservation. The program began with an introductory remark by Dr. Kirti Kusum Joshi, Director of the Institute of Applied Science, setting the stage for the seminar and emphasizing the importance of research and collaboration in the field of natural food colorants.

Dr. Sabina Shrestha, Associate Professor at Madan Bhandari University of Science and Technology (MBUST), presented a working paper titled “चिल्लाङ्गका प्राकृतिक खाद्य रंगका लागि उपयोगी केही वनस्पतिहरू” focusing on the identification and utilization of native plants from Chitlang as sources of natural food colorants. Prof. Dr. Keshab Shrestha, former Chief of the Natural History Museum, Tribhuvan University, and a leading botanist and author of the influential book "Dictionary of Nepalese Plant Names" (1984), delivered a presentation on the journey to conserving indigenous trees. The seminar included opinions and experiences from stakeholders of Chitlang: Mrs. Ram Maya Jimba, Secretary of Chandragiri Community Forest User Group, discussed community forestry requirements of initiatives for the utilization of local plant resources. Mr. Radha Krishna Basnet, a representative of the homestay sector in Chitlang, highlighted the integration of native edible plants into local tourism and hospitality, emphasizing the economic and cultural benefits. Mr. Buddha Ratna Manandhar, former principal and homestay owner, shared insights on utilizing native edible plants in community-based tourism and education.

The seminar concluded with remarks from Er. Padma Sundar Joshi, Vice-President of MBUST, underlined the university's commitment to research, conservation, and sustainable development. The Forest Biomaterials Science and Engineering program at MBUST is actively engaged in research on the chemical composition and potential industrial applications of native species, including their use as natural colorants. This research aims to develop eco-friendly food colorant alternatives and value-added products, supporting both biodiversity conservation and community livelihoods. Community forestry groups and homestay operators in Chitlang are increasingly recognizing the importance of native plants not only for ecological health but also for their economic potential in food tourism and local enterprise. The seminar served as a platform to bridge academic research, conservation efforts, and community-based economic development, with a special focus on the sustainable harnessing of natural colorants from Chitlang's indigenous plants.



Dr. Sabina Shrestha presenting on "Potential Natural Food Colorant Plants of Chitlang"



Dr. Sabina Shrestha highlighting on use of natural colorants in food matrix



Prof. Dr. Keshab Shrestha presenting on Journey to Conservation of Indigenous Trees



Prof. Dr. Keshab Shrestha being presented with two native plants of Chitlang Gufala (*Holboellia latifolia*), Rupasi or Dimar (*Maclura cochinchinensis*) for plantation in Swayambhu by Vice President of MBUST Er. Padma Sundar Joshi

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