

Newsletter



School of Biological Sciences

AIPH University



December 2024



Newsletter

School of Biological Sciences

EDITORIAL DESK

Welcome to the latest edition of the Newsletter from School of Biological Sciences, AIPH University. We are excited to present the remarkable achievements and milestones of our students and faculty and share about the different activities carried by the school during the month of December 2024.

December 2024 was a testament to the academic dedication and resilience exhibited by our students. The 1st Semester Midterm 1 exams and the 3rd Semester End Term examinations were conducted smoothly, showcasing the hard work and diligence of our students and faculty.

In celebration of World Antimicrobial Resistance (AMR) Awareness Week, the results of the National Level Poster Competition were announced. The innovative and thought-provoking posters reflected the students' creativity and understanding of the critical issue of AMR. Congratulations to all the winners and participants for their outstanding contributions.

This issue covers 2024 in Review: A Year of Dynamic Events at AIPH University and Glimpses of SBS, AIPHU Research in the Year of 2024. The year 2024 was a vibrant and dynamic period for AIPH University, marked by numerous events and milestones. From academic conferences and workshops to cultural festivals and sports competitions, the campus buzzed with activity. These events not only enriched the academic experience but also strengthened the sense of community and camaraderie among students and faculty. The School of Biological Sciences (SBS) at AIPH University has had a remarkable year with significant research contributions and achievements.

We look forward to continuing this journey of academic excellence, research innovation, and community engagement in the coming year. Here's to another year of achievements and growth at AIPH University!

Warm regards,

[Prof. Padan Kumar Jena]
Chief Editor

Editorial Team

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December 2024

A Month of Academic Rigour and Resilience: December 2024 at School of Biological Sciences, AIPH University

December 2024 was an intense month at the School of Biological Sciences, AIPH University. First-semester students tackled their Midterm 1 exams from the 9th to the 14th, marking a pivotal point in their new academic journeys. Meanwhile, third-semester students braved the comprehensive End term exams from the 10th to the 26th, demonstrating their accumulated knowledge and skills. The campus was filled with an atmosphere of determination and diligence, as students dedicated long hours to studying, often forming supportive study groups and making use of every available resource. The shared experiences of stress, late-night revisions, and ultimately, the relief of completing exams, brought everyone closer together. This challenging month tested not only their academic prowess but also their resilience and perseverance, setting a strong foundation for future endeavours.



The recent evaluation of the "Research Proposal and Seminar" in the School of Biological Sciences, AIPH University, highlighted the innovative approaches and comprehensive understanding demonstrated by students, reflecting positively on both their research skills and presentation abilities.



Research Proposal Seminar Evaluation



Faculty's Column

Waste Management: Methods and Concerns

Dr. Arati Ray

Assistant Professor, School of Biological Sciences, AIPH University

Wastes are either organic or inorganic in nature, which is generated in huge amount from various sectors such as agriculture, industry, mining, municipal and power plants etc. Present days global challenges of waste management aptly deciphered the quotation by circular economist Walter R. Stahel “The goods of today are the resources of tomorrow at yesterday’s resource prices.” Which emphasises that wastes should not be undervalued or misplaced. The nutritional composition of wastes can be macronutrients such as nitrogen (N), phosphorus (P), potassium (K), calcium (Ca), magnesium (Mg), sulfur (S), micronutrients and other valuable substances, which is primarily depends on the type of industry generating those wastes. Traditionally the wastes were managed through **open dumping**, landfilling, burning or open incineration, littering, or pit disposal. **Whereas in present days, different advanced and engineered techniques are in use to** convert the waste materials into reusable products based on the valuables present. The techniques are either independent physical, chemical, biological or combination techniques adopted for waste valorization, management, and nutrients recovery from those wastes.



Modern techniques utilized for waste valorization are:

- ✓ **Source reduction of wastes:** The practice of reducing wastes generated at the source, such as reutilization of some of the wastes generated at industrial/ agricultural sites itself. Designing of products with longer lifespan and lower waste generation ability.
- ✓ **Thermal conversion:** Thermochemical process of waste decomposition in limited presence of oxygen. The processes can be combustion, pyrolysis, gasification, hydrothermal carbonization or plasma processing, which leads to valuable production such as biochar, bio-oil or biogas.
- ✓ **Anaerobic digestion:** The biological process where microorganisms mediated break down of organic matter carried out in absence of oxygen. It is often used for food and agricultural waste valorization, producing biogas and compost as byproducts.
- ✓ **Mechanical biological treatment (MBT):** A combination of mechanical sorting and biological processing (composting or anaerobic digestion) to valorize the waste.
- ✓ **Vermicomposting:** Organic wastes (such as food scraps) breaking using earthworms, to form nutrient-rich vermicompost, which is used as fertilizer to improve soil health. This method is particularly useful for small-scale composting.
- ✓ **Electroflocculation/Electrocoagulation:** These technologies used for effective treatment of wastewater generated from industries for removal of various pollutants, for circularization of treated wastewater again in that industry.

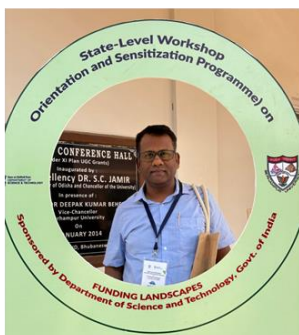
Although large quantity generation and inherent toxicity of waste materials are the prime setbacks to different waste management techniques, but development of upgraded techniques in association with living organisms (both plants and animals) fostering a sense of sustainable growth to society and ecosystem.



Research & Innovation

Seminar/Conference Participation

Dr. Umakanta Swain, Dr. Dhiraj Kumar Nanda, and Dr. Jyoti Ranjan Rout participated in the DST-Sponsored State-Level Workshop on Funding Landscapes, held on December 14-15, 2024, at Berhampur University. The insights gained from the DST-Sponsored State-Level Workshop on Funding Landscapes will enhance the university's research capabilities and open new avenues for funding, ultimately benefiting both faculty and students in their academic pursuits..

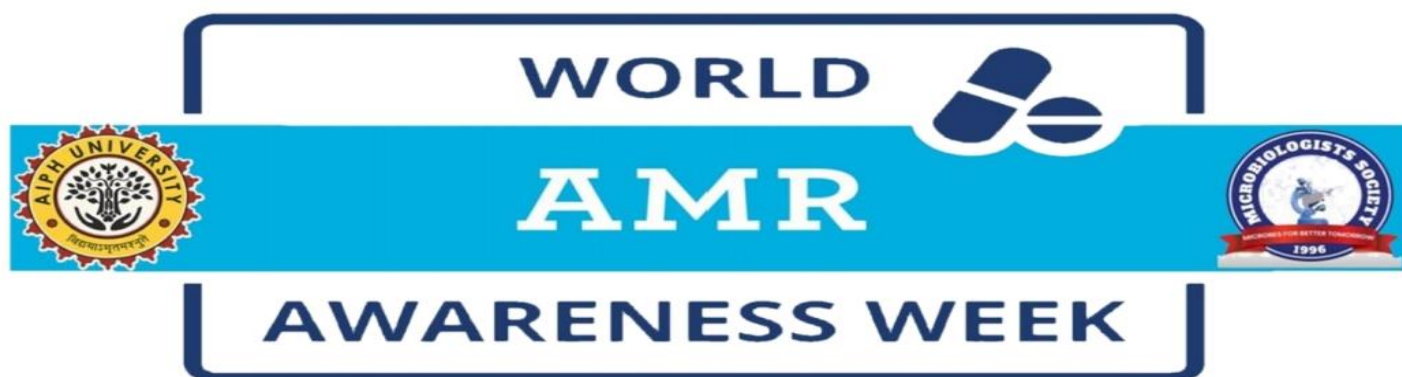


Dr. Soumya Ranjan Dash participated in the Odisha Research Conclave 2024, held from December 26-28, organized by the Odisha Higher Education Research Council at FM University.



Prof. Padan Kumar Jena and Dr. Soumya Ranjan Dash participated in the 47th Annual Conference of the Orissa Botanical Society & National Conference on "Research Approaches for Sustainable Growth of Plants and Microbes in Present Climatic Conditions," held on December 28-29, organized by OBS and FMU at FM University, Balasore.

**Announcement of results of National Level Poster Competition on
World AMR Awareness Week, 2024**



2024

National Level Poster Competition
EDUCATE. ADVOCATE. ACT NOW.

Organized by

AIPH University, Bhubaneswar

in association with

Microbiologists Society, India (MBSI)

WINNER

1st Prize: Divya Varshney,
Aligarh Muslim University, Aligarh

2nd Prize: M. Tanusree,
St. Pious X Degree & PG College for women,
Hyderabad

3rd Prize: Prabhudutta Sahoo,
Dhenkanal Autonomous College, Dhenkanal

&

Padmini Pradhan,
MSc Zoology, **AIPH University**, Bhubaneswar,

2024 A Review: A Year of Dynamic Events at AIPH University

2024 was a year filled with exciting events and activities at AIPH University. Here are some of the highlights:

Academic Events:

- **Republic Day (January 26, 2024):** AIPH University Celebrates Republic Day and Embarks on Fit India Week: Nurturing Unity, Progress, and Wellness



- **Student Development Program (February 26-27, 2024):** AIPH University organized a two-day Student Development Program on "Hands-on training on advanced biological laboratory techniques" in association with the Microbiologists Society, India. 43 participants, hailing from both local and distant locales, engaged in the inaugural day of AIPH University's Student Development Program. Here, they delved into the intricate world of advanced biological laboratory techniques, guided by esteemed speakers and fellow enthusiasts. **Prof A. M. Deshmukh**, President, Microbiologists Society, India (MBSI) graced the occasion as chief speaker and delivered a talk **Why Microbiology?** Explaining the importance of microbes and the importance of advanced techniques from microscopy to AI in unveiling the mystery of microbes.



- **Annual Sports Meet (March 11-16, 2024):** A Celebration of Athletic Excellence at AIPH University



- **Tuberculosis Day (March 24, 2024)** Celebration AIPH University, Bhubaneswar



- **World Thalassemia Day (May 8, 2024):** Empowering Lives, Embracing Progress: Equitable and Accessible Thalassemia Treatment for All"



- **World Environment Day (June 5, 2024):** World Environment Day was celebrated at AIPH University Campus on the theme is “Our land. Our future. We are #Generation Restoration.” The focus is on land restoration, stopping desertification, and improving drought resilience.



- **Independence Day (August 15, 2024):** 78th Independence Day Celebration at AIPH University



- **Ganesh Puja (September 6, 2024):** Echoes of Devotion at the University Campus



- **Swachh Bharat Abhiyan (October 2, 2024):** A Vision of Cleanliness AIPH University's Commitment to Cleanliness: The Swachhata Hi Seva Campaign



- **World Antimicrobial Awareness Week (November 18-24, 2024):** Uniting Against AMR: AIPH University's Week of Awareness and Action

School of Biological Sciences, AIPH University in association with Microbiologists Society, India (MBSI) observed World Antimicrobial Awareness Week on November 22, 2024, with a series of advocacies and educational events.



Glimpses of SBS, AIPHU Research 2024

Research Projects, SBS (2024)

1. Comprehensive Tribal Management for Decentralized TB Care Services, Funded by ICMR, New Delhi; Principal Investigator: Dr. Pradipta Ranjan Rauta (Sanction Letter No: 5/8/3/IR/Tri-TB/ITRC/2022/ECD-1)
2. An economical nanotechnology based self-screening platform to detect human Papillomavirus in menstrual blood of sanitary napkins for prevention and early detection of Ca Cervix” Funded by ICMR, New Delhi; Principal Investigator: Dr. Pradipta Ranjan Rauta (Sanction Letter No: EM/Dev/SG/72/3893/2023 E-office-179206)

Research Publications, SBS (2024)

1. Kumar, H., **Kumar Nanda, D.**, Gaare, M., & Singh, R. (2024). Characterization of effective antifungal Lactobacillus strain isolated from Chilika curd. **Indian Journal of Dairy Science**, 77(1), 49-56.
2. Nayak, D., Mishra, A. K., Malla, S., Swain, U., Panigrahi, K., Panda, J., Rustagi, S., **Rauta, P. R.**, & Mohanta, Y. K. (2024). Eco-Friendly Mycogenic Synthesis of Iron Oxide Nanoparticles Using *Volvariella volvacea* and Unveiling its Potential as Antibiofilm and Anticancer Agents. **ECS Journal of Solid-State Science and Technology**, 13(8), 087003.
3. Panda, J., Mishra, A. K., Mohanta, Y. K., Patowary, K., **Rauta, P. R.**, & Mishra, B. (2024). Exploring Biopolymer for Food and Pharmaceuticals Application in the Circular Bioeconomy: An Agro-Food Waste-to-Wealth Approach. **Waste and Biomass Valorization**, 15, 5607-5637.
4. **Ray, A.**, Kumar, M., Biswas, K., Mohanty, S., & Pandey, S. (2024). Phosphorus recycling mediated by *Pseudomonas aeruginosa* from eutrophic biochar. **Geomicrobiology Journal**, 41(3), 277–286.
5. Singhdeo, K., **Dash, S.R.**, Karjee, P.K., Bal, R., Sarangi, M.K., Swetalina, KP. S. (2024). Wild Edible Fruits of Eastern Ghats of India: A Review. **African Journal of Biological Sciences**, 6 (5), 6533-6561.
6. **Dash, S. R.**, Karjee, P. K., Patra, B., Bal, R., & Kar, A. (2024). Chemical constituent, essential oil and biological activities of different species of Lamiaceae and their effect on human health. **African Journal of Biomedical Research**, 27(3s), 5361–5370.
7. Mohanta, A. K., Sahoo, C., Jena, R., Sahoo, S., Bishoyi, S. K., Patra, B., **Dash, S. R.**, & Pradhan, B. (2024). Effect of inappropriate solid waste on microplastic contamination in Balasore district and its aquatic environment. **Bulletin of the National Research Centre**, 48(1), 120.
8. Patra, B., Gautam, R., Das, M. T., Pradhan, S. N., **Dash, S. R.**, & Mohanta, A. K. (2024). Microplastics associated contaminants from disposable paper cups and their consequences on human health. **LabMed Discovery**, 1(2), 100029.
9. Behera, D., Panigrahi, K., & **Rout, J. R.** (2024). Assessment of dimethoate and malathion mediated toxicity on *Solanum lycopersicum* L. **Environmental Science and Pollution Research**, 31(59), 66842–66853.

Books Chapter, SBS (2024)

1. Pradhan, B., Maharana, S., Patra, S., Nayak, R., Behera, C., Bhuyan, P. P., **Dash S.R.**,... & Jena, M. (2024). Biosorption of Heavy Metal by Algae to Meet Clean Environment: The Need of the Hour for a Sustainable Future. In *Algal Biotechnology* (pp. 125- 138). CRC Press.

Design Patents, SBS (2024)

1. Rameswamy RK, Verma R, Pradhan SN, **Dash SR**, Patra B and Mahapatra SP. Solar power biological analyzer (Design No.: 410342-001, Date: 13/03/2024) under Intellectual Property, Govt. of India.
2. Rameswamy RK, Bisht D, **Dash SR**, Patra B and Mahapatra SP. Compact antimicrobial bioassay device. (Design No.: 412249-001, Date: 01/04/2024) under Intellectual Property, Govt. of India.
3. **Dash SR**, Karjee PK, Swetalina KPS, Rout S and Bal R. Pollution monitoring device (Design No.: 411718-001, Date: 27/03/2024) under Intellectual Property, Govt. of India.
4. Pradhan SN, Rout S S , **Dash SR**, Patra B , Behera D, Behera B. “Oceanic Fish Monitoring Buoy”. (Design No.: 416432-001, Date: 10/05/2024) Intellectual Property, Govt. of India.





School of Biological Sciences

AIPH University

EAST Campus, Prachi Vihar
Anantapur, Phulnakhara- 754001

Email: info@aiph.ac.in

Tel: +91-9938213237