Special Issue on
Genomics of Antibiotic Resistant Bacteria in Industrial Wastewater Treatment

CALL FOR PAPERS

More recently wastewater treatment is becoming a challenging task for environmentalists. If discharge norms for treatment plants are not maintained, governing authorities will face severe challenges. Thus, wastewater treatment is of paramount importance.

Biological wastewater treatment is a vital environmental biotechnological application and, as drivers of key processes, microorganisms are critical to its success. The cleaning of toxic contaminants or refractory pollutants from industrial wastewater treatment processes is an essential step for the protection of public health. Using sludge in this endeavour represents one of the most used biotechnological processes. Elimination of organic carbon and other nutrients, mainly nitrogen (N) and phosphorus (P), make sludge microbes essential to prevent eutrophication and deterioration of receiving surface waters. The complexity of wastewater microbial communities, based on 16S rRNA sequence analysis is now enormous. Therefore, the genomic study of wastewater microorganisms has an obvious applied significance; however, the importance of wastewater treatment reactors as model systems for microbial ecology is often overlooked. Modern molecular techniques, including environmental genomics, have identified key microbial actors useful for nutrient removal and / or sludge foaming, and have provided many interesting insights into niche diversity, functions, and differentiations. Now is the time for wastewater microbiology to be recognized as a mature and dynamic discipline, offering much towards a deeper understanding of life in complex microbial communities.

This Special Issue discusses the key problems and its solution with various applicable approaches to combat antibiotic resistant genes selected to illustrate the past and future roles of molecular ecophysiology and genomics in the development of wastewater microbiology as an important sub discipline of microbial ecology. As we have very limited knowledge about the composition, dynamics and stability of microbial communities, various processes in wastewater treatment are considered unchartered territory. Its improvement is often based on a trial-and-error approach, leading to inconsistent results and unexpected behaviours. In recent years, with the development of several new high throughput sequencing platforms, metagenome sequencing strategies and bioinformatics toolboxes, the analysis of the genome of complex communities has become much more accessible. Metagenomics leads the way for more specific studies in related fields. Finally, genomic studies of wastewater treatment microbes, in addition to their biotechnological applications, are also an excellent testing ground for variety of other ecological and environmental questions. Wastewater treatment plants are considered hotspots for the environmental dissemination of antimicrobial resistance determinants. This Issue welcomed original research and review articles discussing the above.

Potential topics include but are not limited to the following:

- Metagenomics reveals the impact of wastewater treatment plants on the dispersion of microorganisms and genes in aquatic sediments
- Present status of marker genes of bacteroides and related taxa for identifying wastewater pollution
- Mobile antibiotic resistome in industrial wastewater treatment plants revealed by metagenomic sequencing
- Antibiotic resistant genes as emerging contaminants in industrial wastewater treatment
- Functional metagenomic characterization of antibiotic resistance genes in industrial wastewater treatment plant
- Bacterial diversity and community composition from activated sludge process of wastewater treatment
- Molecular characterization of water treatment resistant genes
- Molecular characterization of multi drug resistant genes in wastewater treatment plant
- Performance and microbial community dynamics in anaerobic digestion of waste activated sludge
- Characterization and dynamic shift of microbial communities in waste water treatment plant
- Performance and microbial community identification in mesophilic aerobic anaerobic membrane bioreactor for industrial wastewater treatment
- Genomic analysis of heavy metal resistant genes present in waste water treatment plant
- Microbial community analysis of soils contaminated with nickel, arsenic, chromium and petroleum hydrocarbons
- Wastewaters treatment containing ammonia nitrogen, arsenic and phenol using aerobic submerged membrane bioreactor

Authors can submit their manuscripts through the Manuscript Tracking System at https://review.wiley.com/submit?specialIssue=175577.

Papers are published upon acceptance, regardless of the Special Issue publication date.

Lead Editor

SHAH MAULIN, Industrial Waste Water Research Lab, Division of Applied and Environmental Microbiology Lab at Enviro Technology Ltd., India
shahmp@beil.co.in

Guest Editors

Günay Yıldız Töre, Namık Kemal University, Tekirdağ, Turkey
gyildiztore@nku.edu.tr

Ashootosh Mandpe, Indian Institute of Technology Indore, Indore, India
as_mandpe@iiti.ac.in

Lalit Mohan Pandey, Indian Institute of Technology Guwahati, Guwahati, India
lalitpandey@iitg.ac.in

Submission Deadline
Friday, 2 August 2024

Publication Date
December 2024