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Advancing Microalgae Biotechnology: Integrating Food Waste for Sustainable Bioenergy Production

During the extraordinary global sustainability challenges, algae have been discussed as versatile and potent resources for sustainable and eco-friendly solutions. Their adaptability and diverse applications across various sectors confirm their pivotal role in innovation. They have high potential in biofuel production, wastewater treatment, emission reduction, nutrition, and sustainable agriculture. Biotechnology-driven strategies, including bioprocess engineering, innovative photobioreactor designs, molecular engineering, and integrated approaches, are maximizing the algae potential for sustainability. Their unique characteristics, such as high photosynthetic efficiency, rapid growth, carbon sequestration capabilities, and efficiency in nutrient cycling, prompted recent research and developments across biotechnology, biochemistry, and environmental science. The distinct metabolic pathways of algae to synthesize many bioactive compounds with potential biotechnological applications is a new avenue for sustainable development. This talk aims to highlight recent advancements and explore new applications of microalgae, emphasizing the potential application of food waste to improve their economic feasibility towards clean energy production.

Biography

Dr. Abdelfatah Abomohra, PhD, is currently a Habilitant at Aquatic Ecophysiology and Phycology, Institute of Plant Science and Microbiology, MIN Faculty, University of Hamburg, Germany. He received his PhD in "Phycology" through Deutscher Akademischer Austauschdienst (DAAD) in 2012. He performed postdoctoral research at University of Hamburg, Harbin Institute of Technology, and Alfred-Wegener-Institute. Before joining University of Hamburg, he was a professor and head of New Energy and Environmental Laboratory (NEEL) at Chengdu University, China. He was awarded Alexander-von-Humboldt fellowship for experienced researchers in 2022. His major is interdisciplinary of phycology and environmental engineering. He has stupendous research experiences and finite vision in algal biotechnology and value-added products through circular bioeconomy. According to Web of Science, he has published 179 articles, with 7 papers as "Highly Cited Paper" per August 2024. In 2020-2022, his name was mentioned among the World's Top 2% of Scientists published by Stanford University.