

## ACHIEVEMENTS

# Developing an Efficient New Method for Identifying Far-Red Cyanobacteria

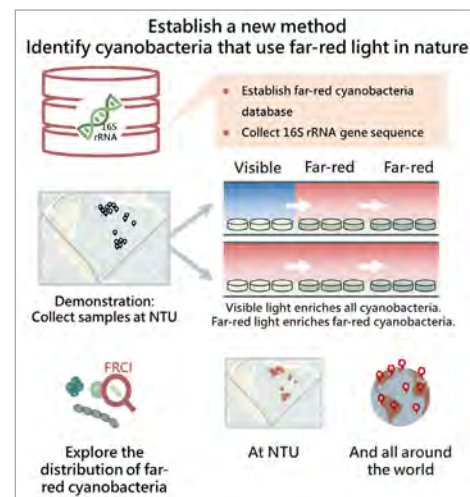
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Associate Prof. Ming-Yang Ho from NTU Department of Life Science and Assistant Prof. Po-Yu Liu from the School of Medicine, National Sun Yat-sen University have collaborated to develop a bioinformatics method for effectively identifying far-red cyanobacteria. Named as “Far-Red Cyanobacteria Identification” (FRCI), this novel method utilizes high-throughput next-generation sequencing technology with higher sensitivity and resolution to better understand the distribution and diversity of these special cyanobacteria in the environment.

Far-red cyanobacteria are a type of bacteria capable of photosynthesis using far-red light, with ecological significance in various ecosystems. Traditional methods struggle to accurately and efficiently identify these strains, especially when they are present in low quantities. FRCI has made significant improvement in this regard, enabling precise identification of far-red cyanobacteria and providing more detailed data, including species, proportions, and their relative abundance compared to other bacteria.

The research team conducted field sample collections, including grasslands and mosses, and applied the FRCI method for analysis. The results revealed the presence of far-red cyanobacteria in various locations on the NTU campus, with FRCI demonstrating its clear advantage in identifying low quantities of these cyanobacteria. Furthermore, the team used FRCI to identify far-red cyanobacteria in sequencing data from soils, deserts, hot springs and intertidal zones worldwide, contributing to a better understanding of the distribution of these organisms in ecosystems around the globe.

This research provides a new tool for the identification of far-red cyanobacteria, offering valuable insights for environmental science and ecology studies.



Establishment and verification of methods for exploring far-red cyanobacteria.



The authors include Ming-Yang Ho (second from the left on the front row), Ying-Yang Li (third from the left on the front row), Pa-Yu Chen (second from the left on the back row) and Jui-Tse Ko (third from the left on the back row).



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