Geographical Distribution and Seasonal Dynamics of Polyphosphate Accumulating Organisms and Glycogen Accumulating Organisms in Sewage Treatment Plants

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In this study, we investigated the geographical distribution of EBPR (Enhanced biological phosphorus removal) among 14 full-scale STPs, and their monthly microbial variations in AS samples of a Sewage Treatment Plant (STP).
Activate sludge (AS) samples were collected from 14 STPs located in Asia and North America.

AS samples from Sha-Tin STP (Hong Kong) have been taken monthly for five years.

The overall profile of bacterial communities has been revealed by assigning 16S rRNA gene pyrosequencing reads to well-defined databases.
Accumulibacter and *Tetrasphaera* were most popular PAOs in most STPs. Tetrasphaera clusters were evenly distributed and GAOs presented in almost all full-scale STPs.

No significant geographical difference was found between sludge samples from Asia and North America.
A seasonal variation pattern was observed among abundances of the identified PAO and GAO populations.

Most AS samples in Asia distributed either along or very close to the TP, TN and COD lines (or their extension lines).