

Linking bacterial colony growth dynamics to indoor environments

Authors: JIERUIYI WENG¹, Bei-Wen Ying ^{1,2}

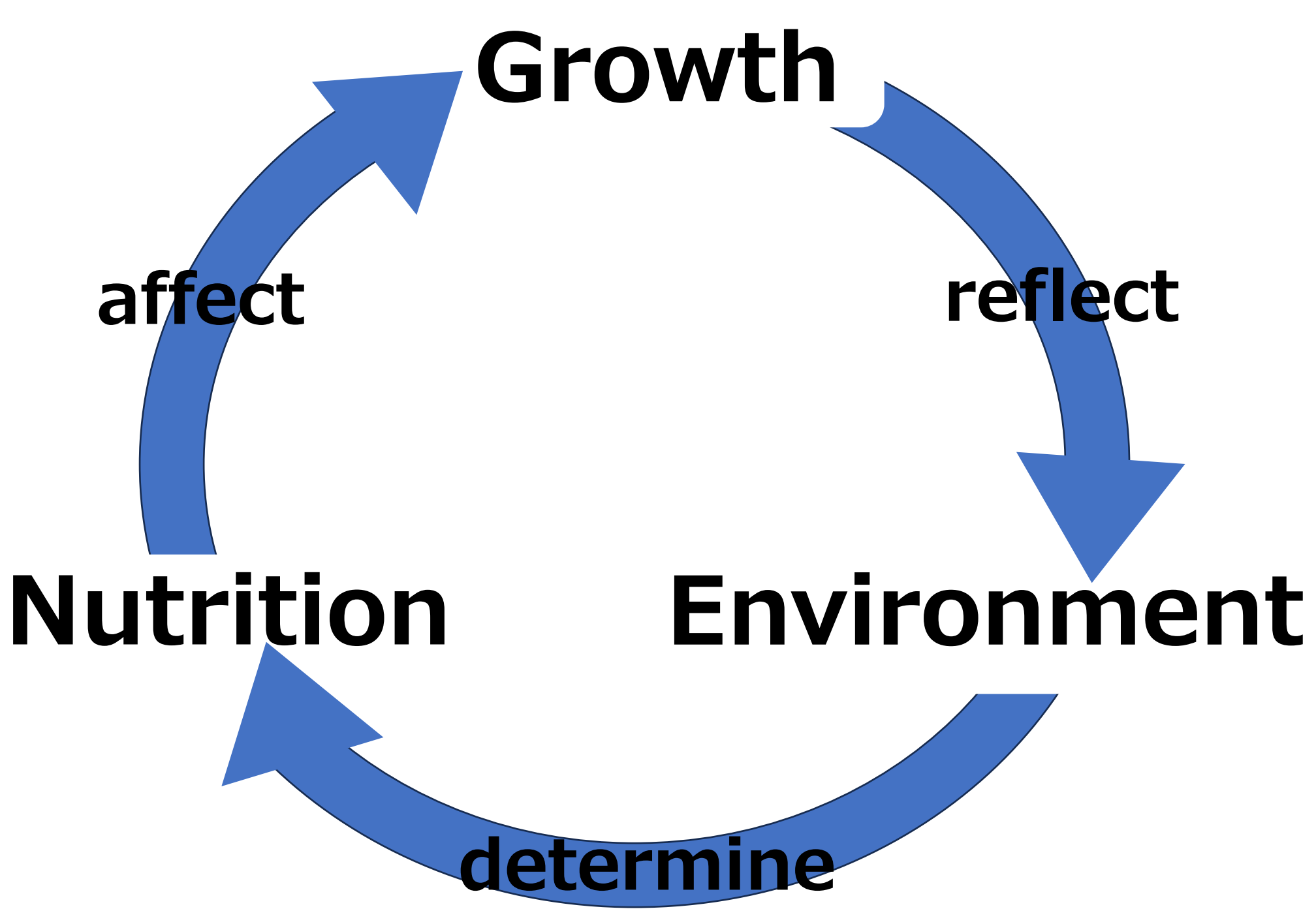
Affiliation : ¹School of Life and Environmental Sciences, University of Tsukuba, Ibaraki, Japan,

²School of Life and Environmental Sciences, University of Tsukuba MiCS, Ibaraki, Japan

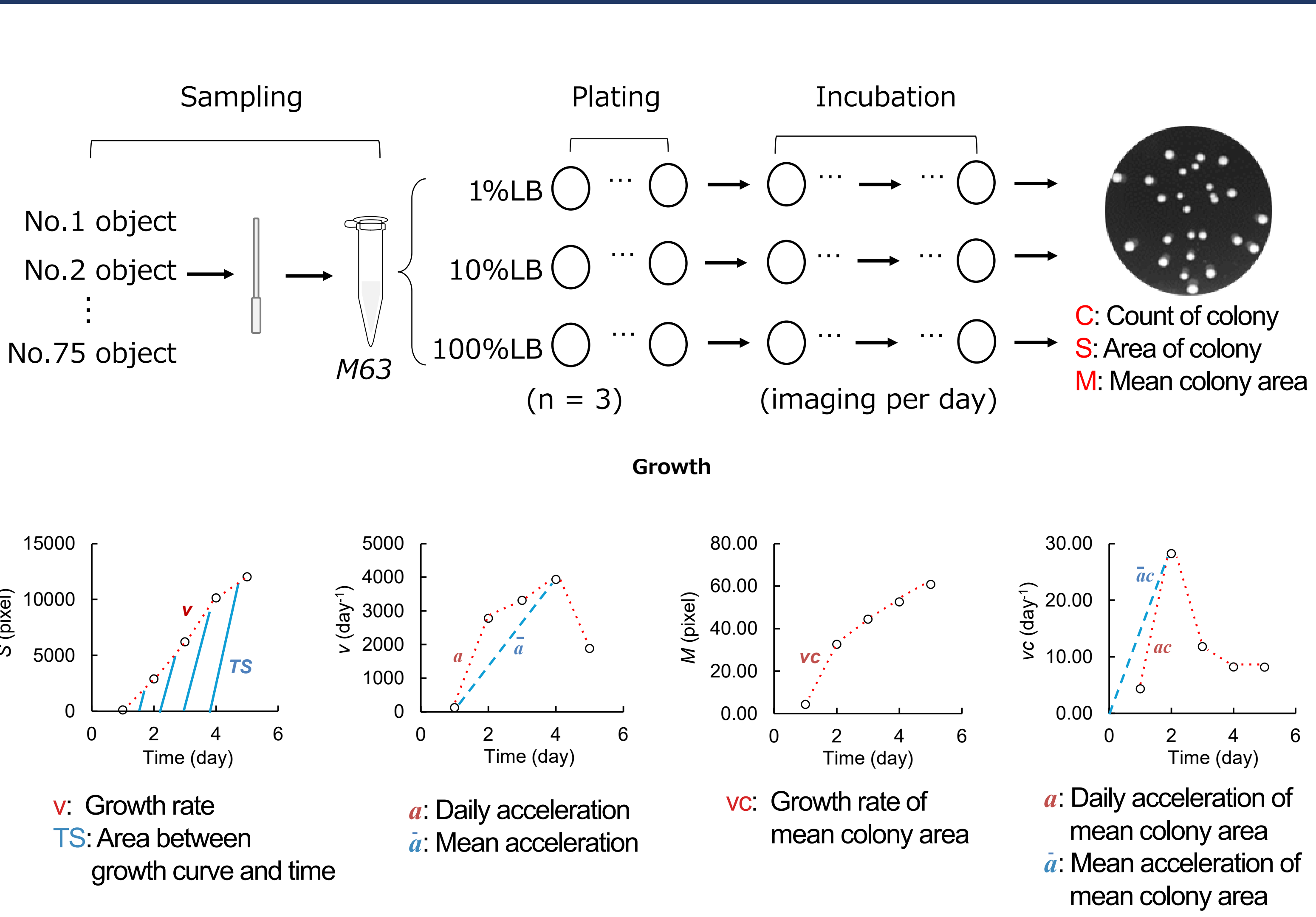
Introduction

People spend about 90% of their time indoors, where they are constantly exposed to diverse microbial communities. While indoor bacteria significantly impact human health and environmental hygiene, most exist in a dormant state due to low-nutrient conditions.

However, the growth dynamics of these communities about how they respond to nutrient shifts and colonize surfaces remain largely unexplored. Understanding these growth patterns is essential for assessing microbial adaptability and managing indoor ecological safety.

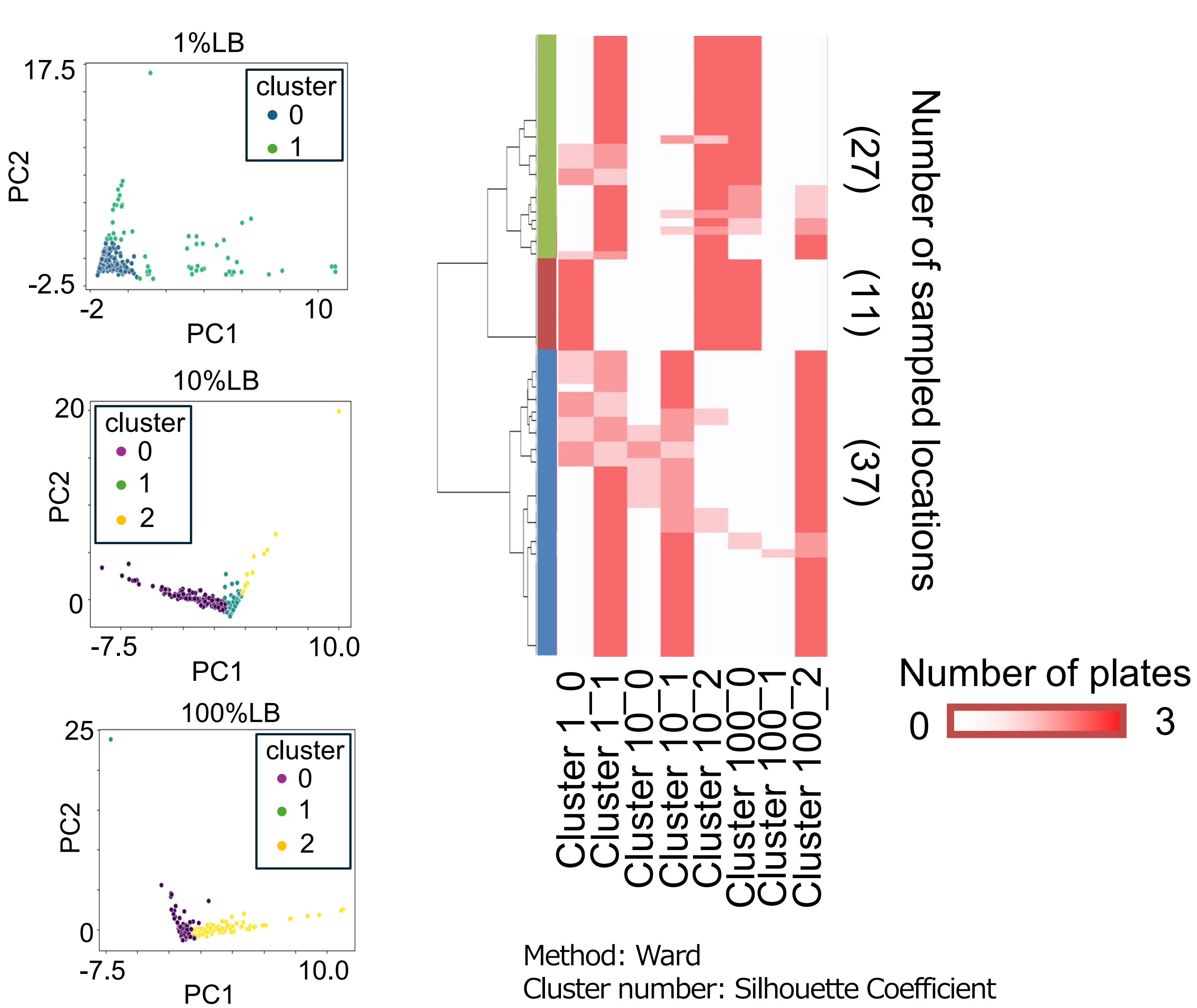


1. Acquisition of growth data



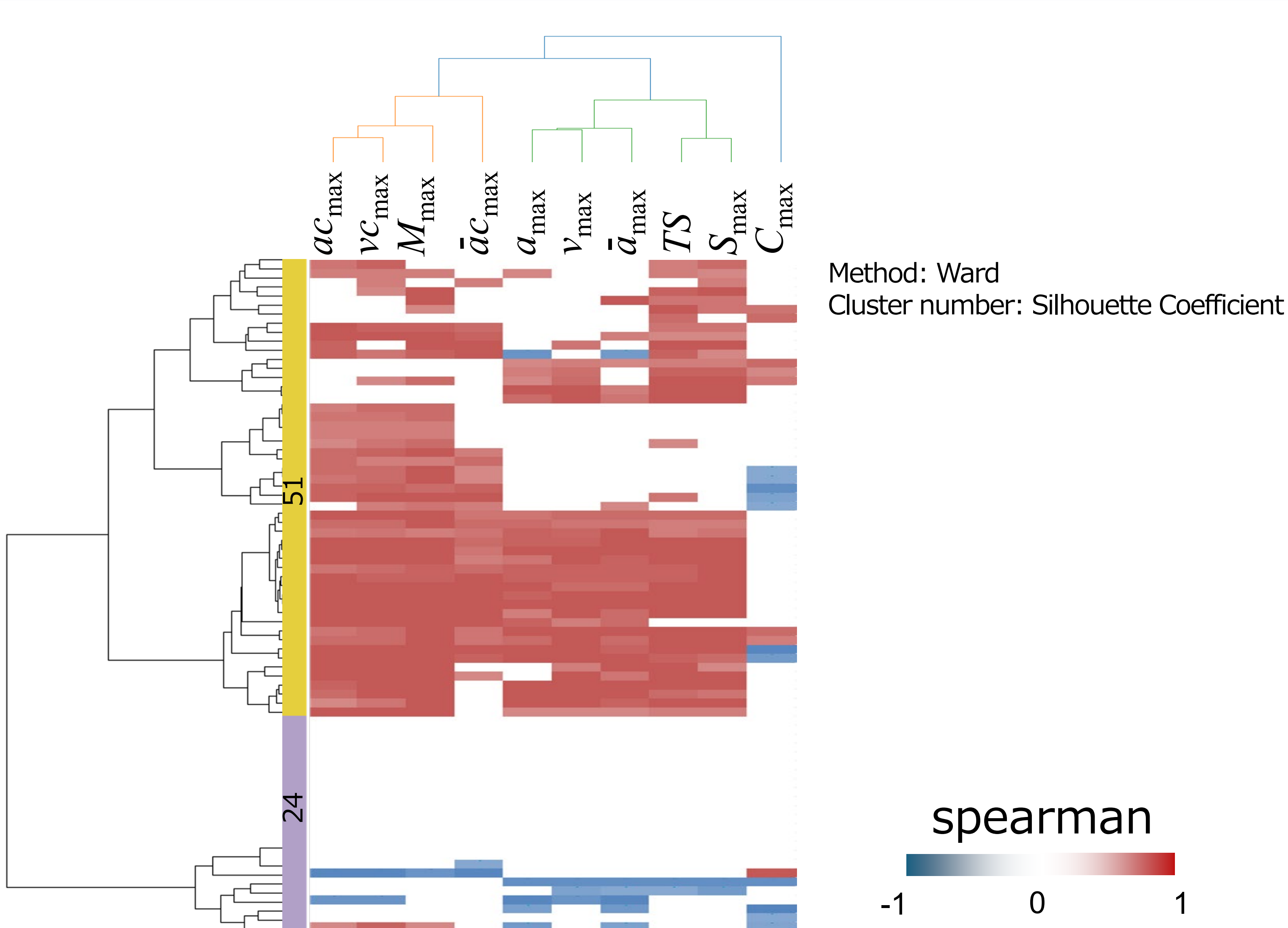
10 parameters were used to estimate the colony growth.

2. Clustering by growth



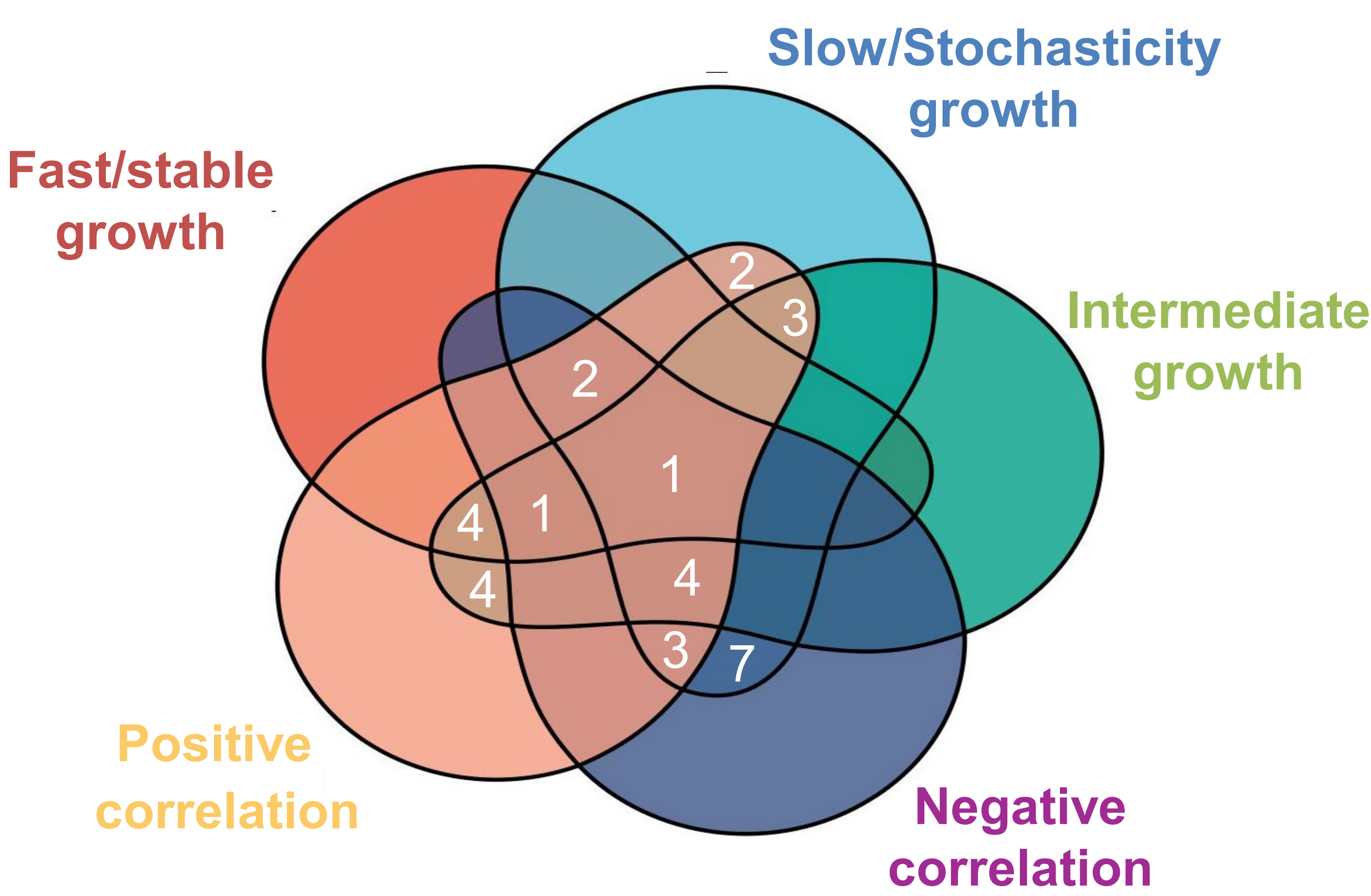
Objects were divided into 3 clusters by growth.

3. Growth-Concentration Correlation



Objects were divided into 3 clusters by growth.

4. Link growth and nutrient



Most environmental microbial communities exhibit concentration-driven growth plasticity.