Bradymonabacteria: novel bacterial predators surviving in saline environments

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Abstract

Bacterial predators are a vital selective force in bacterial communities. Predation releases nutrients that power biogeochemical cycling. Bacterial predators are typically classified as “obligate” predators, which MUST feed on bacteria to survive, and “facultative” predators, which can subsist on a non-bacteria diet. The discovery of a new group of bacterial predators, however, proposes a revision to this classification system. These are Bradymonabacteria. Analyses of their feeding behavior and genetic makeup revealed that Bradymonabacteria adopt living strategies between those of obligate and facultative predators. Like obligate predators, for example, they possess multiple metabolic deficiencies that are shored up only by predation, while their large genomes suggest that Bradymonabacteria could effectively tolerate the absence of prey. The discovery suggests that Bradymonabacteria are more truly facultative than other predators previously classified as such, which might now be re-classified as prey-independent, “opportunistic” predators. Follow-up studies should help clarify the predation mechanism of Bradymonabacteria and their role in the saline environments where they dwell.