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Glycerol kinase (GlpK) during the oral microbiome interspecies interaction.

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Abstract

The oral microbiome engages in a diverse array of highly sophisticated ecological interactions that are crucial for maintaining symbiosis with the host. Streptococci and corynebacteria are among the most abundant oral commensals and their interactions are critical for normal biofilm development. We have previously revealed a specifically symbiotic interaction between *Streptococcus sanguinis* and *Corynebacterium durum* via the release of *C. durum* fatty acids associated with membrane vesicles (MVs), enhancing bacterial fitness. Subsequently, *S. sanguinis* fatty acid metabolism-related genes have been studied. Glycerol dehydrogenase (*gldA*) was firstly characterized its essential role during the interspecies interaction. In this study, we have further characterized glycerol kinase (*glpK*) as another key gene being involved in *S. sanguinis* and *C. durum* interaction. In contrast to *gldA*, we have discovered a unique, complementary role of *glpK* during the interaction, in particular, in the absence of glucose as a carbohydrate source of energy. Overall, our findings have supported the emerging role of commensal *Corynebacterium* spp. as major drivers of oral biofilm ecology, potentially shaping symbiotic health-associated biofilm communities.

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