

Probiotics

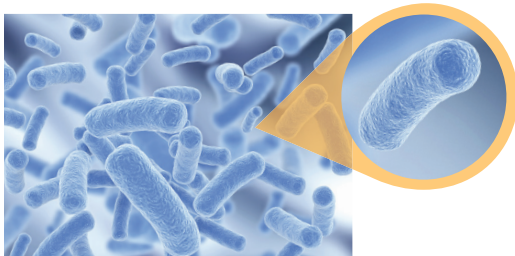
Species versus Strain

Although the term probiotic has become familiar in the popular lexicon, the concepts of species and strain remain largely unclear. The goal of this Technical Note is to simplify these classifications.

Genus: *Lactococcus*

Species: *Lc. lactis*

Strain: *Lc. lactis* [strain ID]

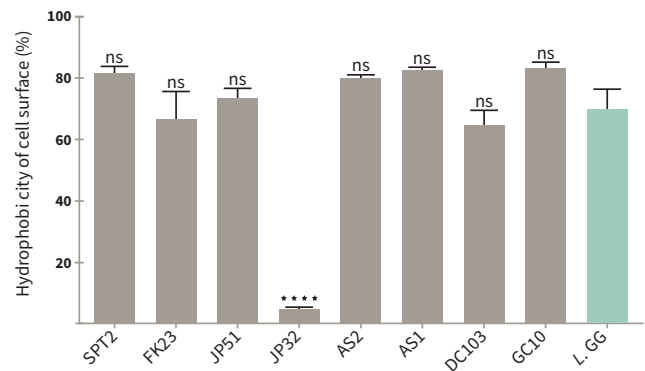
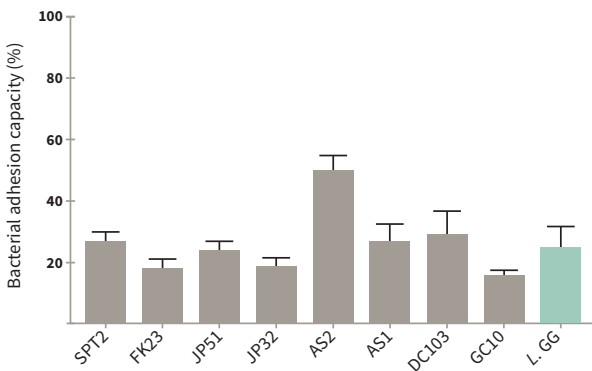


The bacterial **species** category defines an organism on the basis of genetic similarity, biochemical, and phenotypic criteria.

A **strain** designation reflects descendants of a single organism and are classified based on unique characteristics defined by serotyping, enzyme typing, protein/nucleic acids/plasmid characterization, and functional characteristics important to probiotic strains including: undesirable bacteria inhibition, gastric acid tolerance, adhesion/colonization, hydrophobicity, immunomodulatory cytokine production, etc.

Examples

Comparison: 8 (wild type) strains of *Lc. lactis*¹



Comparison: 2 *Lc. lactis* strains (Ecologic BARRIER)²

Function	<i>Lc. lactis</i> W19	<i>Lc. lactis</i> W58
Epithelial Barrier Strengthening (TEERS) post bacterial stressor	-	+
Epithelial Barrier Strengthening (TEERS) post inflammatory stressor	+	-
Cytokine Stimulation (IL-10)	-	+
Lipopolysaccharide Digestion	+	-

1. Nejati, F and Oelschlaeger, T. In Vitro characterization of Lactococcus lactis strains Isolated from Iranian Traditional Dairy Products as a Potential Probiotic. *Appl Food Biotech.* 2016, 3(1):43-51.
2. Van Hemert S, Ormel G. Influence of the multispecies probiotic Ecologic BARRIER on parameters of intestinal barrier function. *Food and Nutrition Sciences.* 2014; 5: 1739-1745.

†These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.