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Characteristics and roles of extracellular vesicles secreted by *propionibacterium freudenreichii*

Vinicius de Rezende Rodvalho

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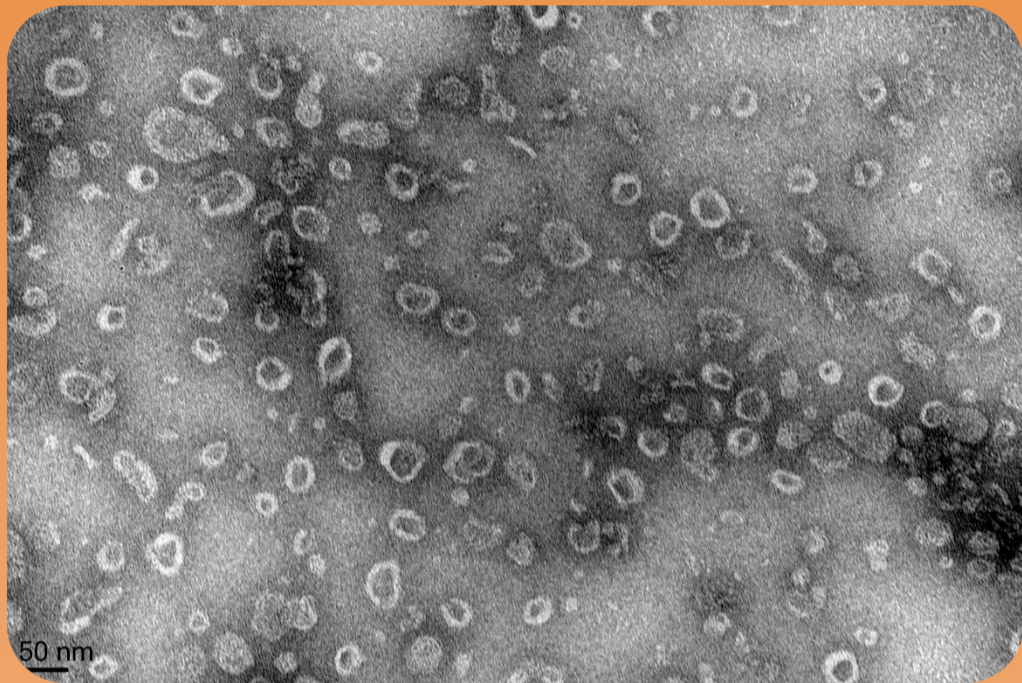


Vinícius DE REZENDE RODOVALHO



PhD fellowship CAPES/COFECUB

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UMR INRA - Agrocampus Ovest
Science and Technology
of Milk and Eggs

MicroBio Team

Microbiology of milk
and egg sectors

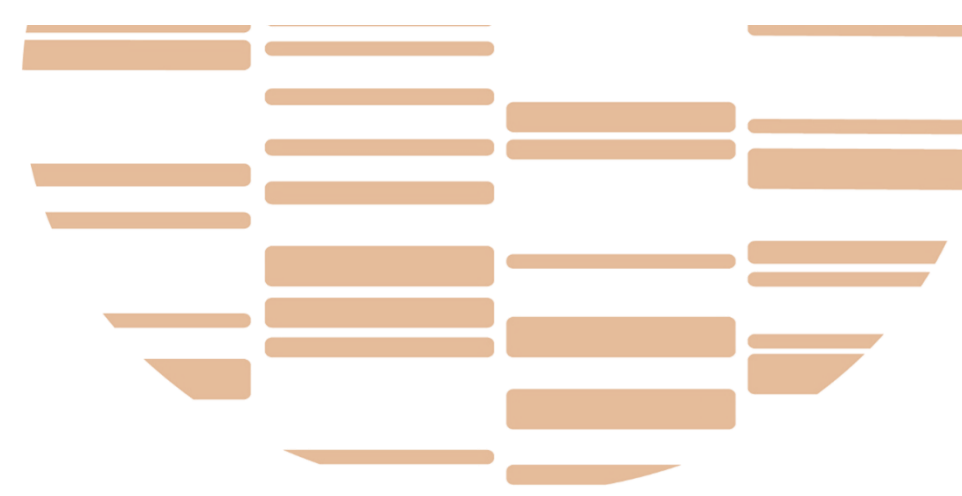
Keywords

Propionic bacteria
Probiotics
Extracellular vesicles
Immunomodulation

Funders



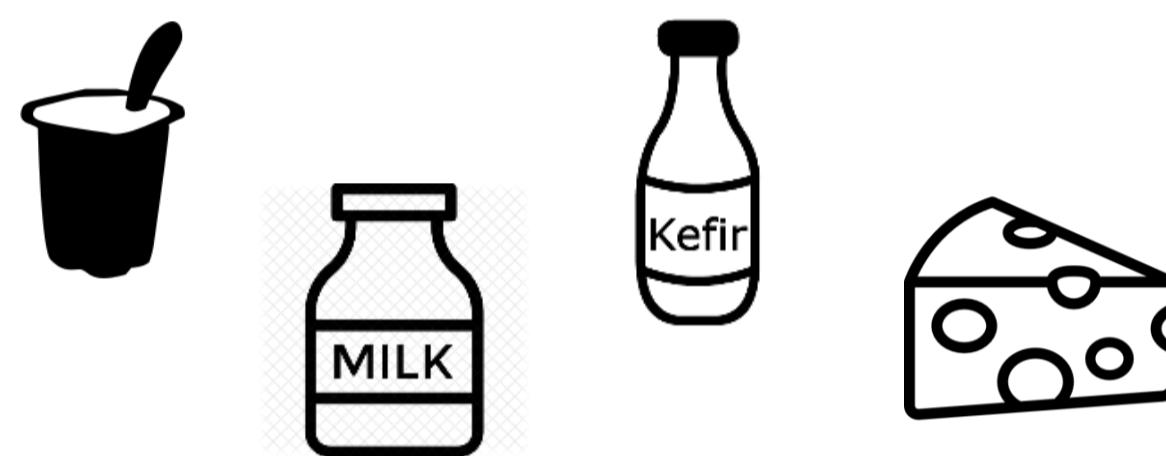
Collaborators



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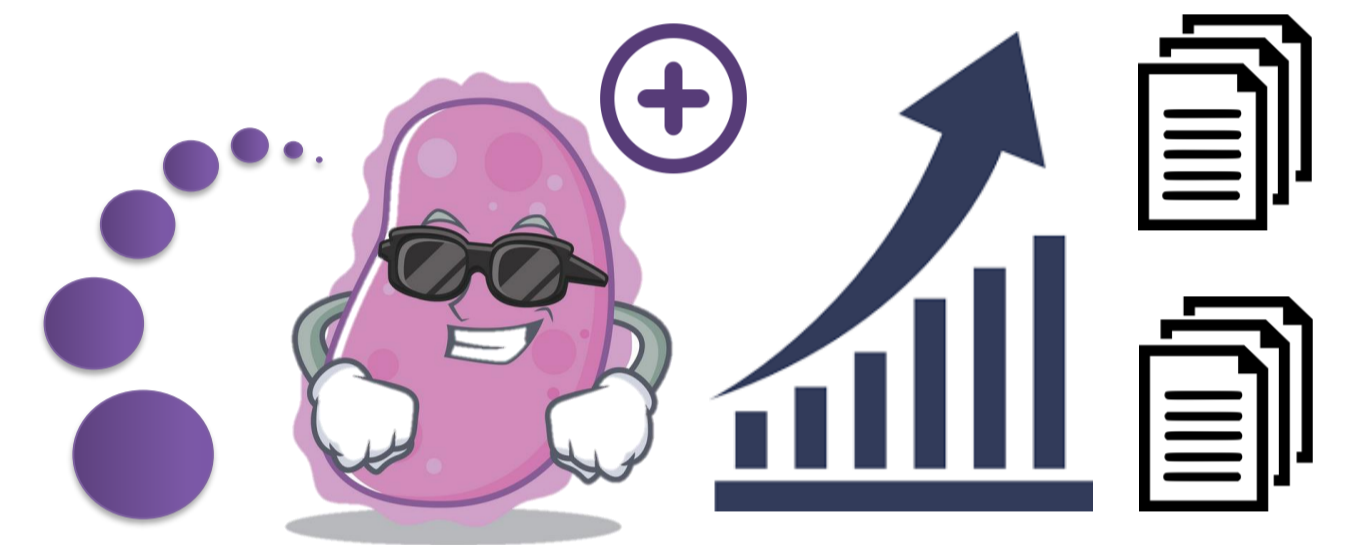
Socio-economic context

- *P. freudenreichii* is a probiotic bacterium with a major role in cheese production.
- Growing economic demand of probiotics products and benefits for human health.
- Importance of extracellular vesicles (EVs) in therapy, diagnostic and delivery of bioactive molecules.



Scientific context

- Rise of interest and publications on the occurrence of EVs in Gram-positive bacteria since 2009.
- Demonstration of EVs biological roles in pathogenic and probiotic bacteria.
- Hypothesis: role of EVs in the probiotic properties of *P. freudenreichii*.



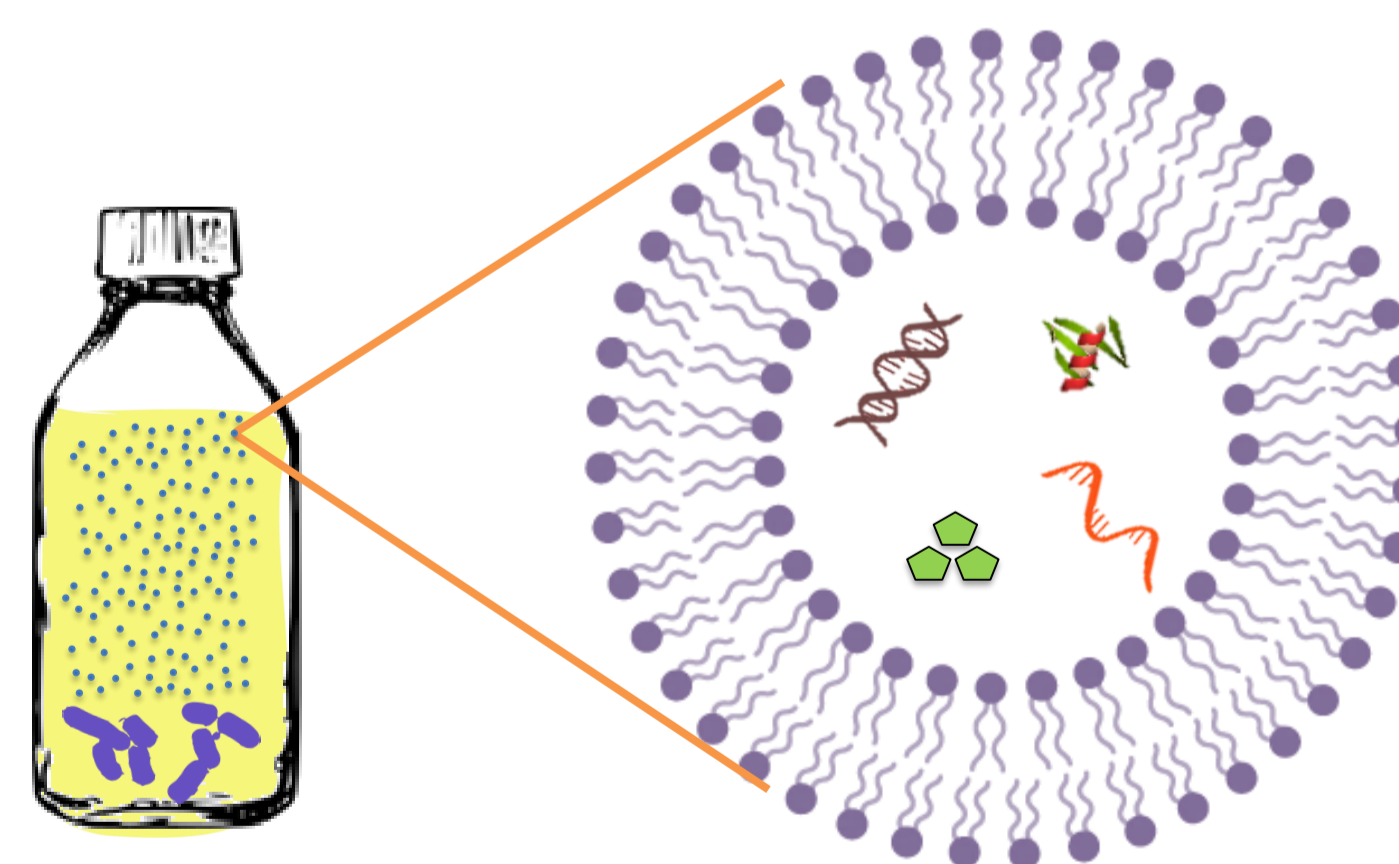
Studies on the occurrence of EVs in Gram-positive bacteria

Research question

- Does the probiotic bacterium *Propionibacterium freudenreichii* produce extracellular vesicles and what are their roles?

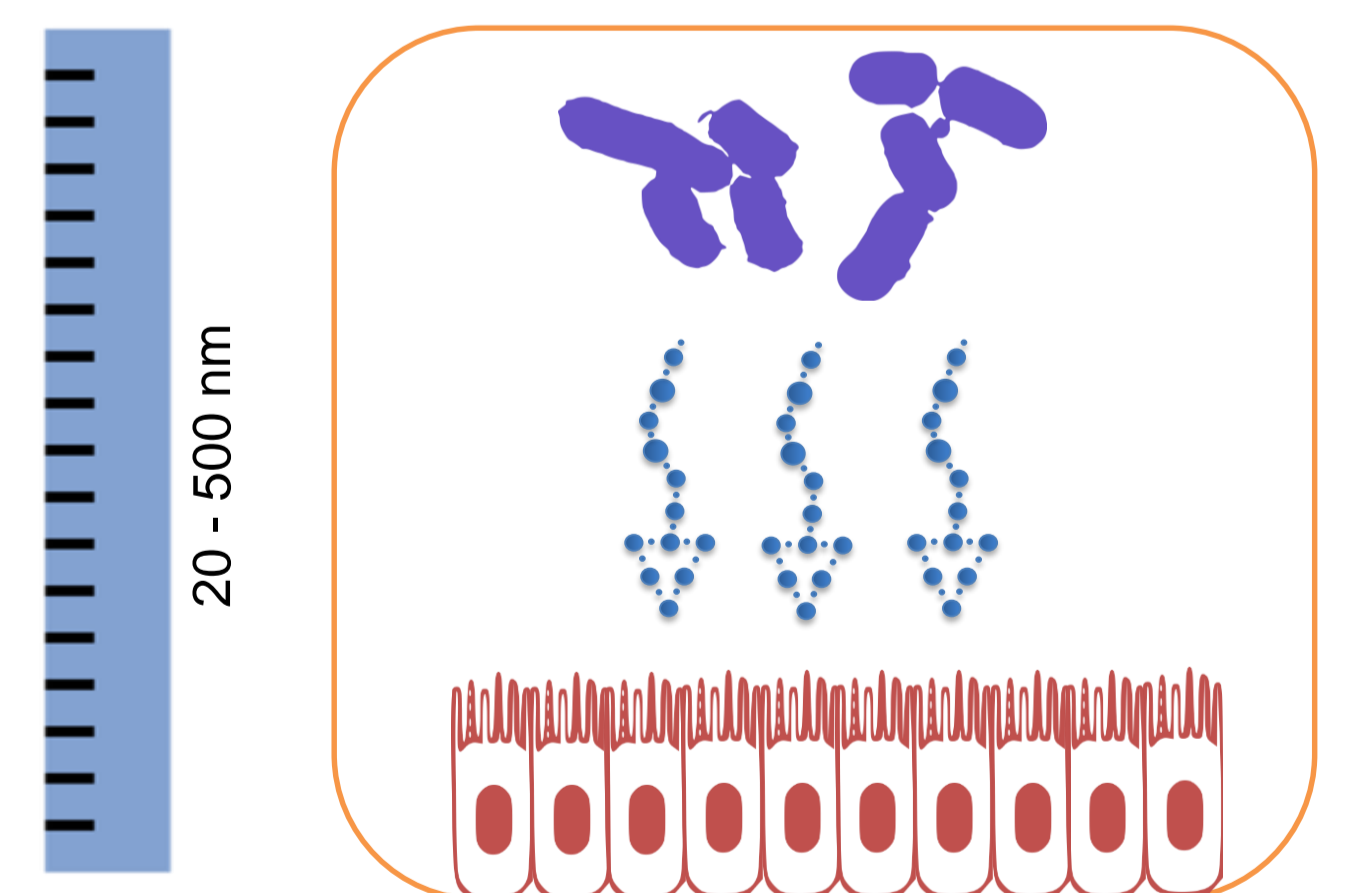
Expected results

- Demonstrate the production of extracellular vesicles by *P. freudenreichii* with their purification from the supernatant of bacterial cultures.
- Characterize the shape, size, concentration, content and other physicochemical characteristics of the vesicles.
- Investigate the biological roles of vesicles, such as immunomodulation of host cells.



Supernatant of bacterial cultures

Extracellular vesicles (EVs)



EVs of *P. freudenreichii*: interaction with the host cells?

Perspectives

- Contribute to still fragmentary knowledge about EVs produced by Gram-positive bacteria.
- Explore the probiotic effects of EVs from *P. freudenreichii*.
- Contribute to the future development of new vesicular systems for the therapy, diagnosis and delivery of bioactive molecules, including immunomodulating compounds.