

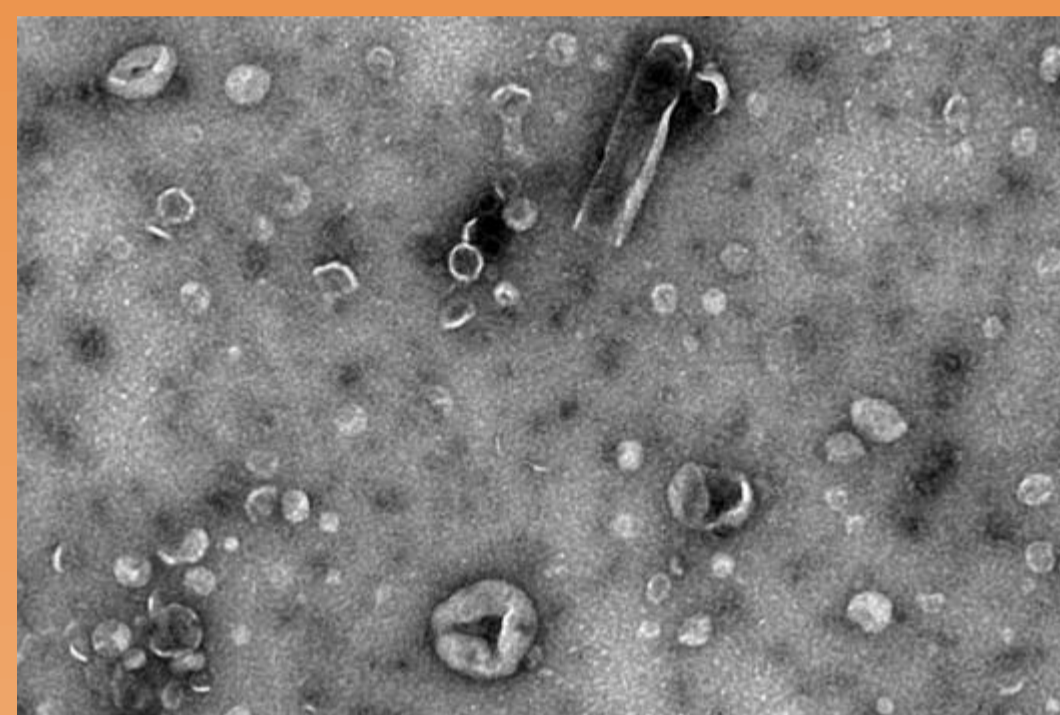


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UMR INRA - Agrocampus Ouest
Science and Technology
of Milk and Eggs

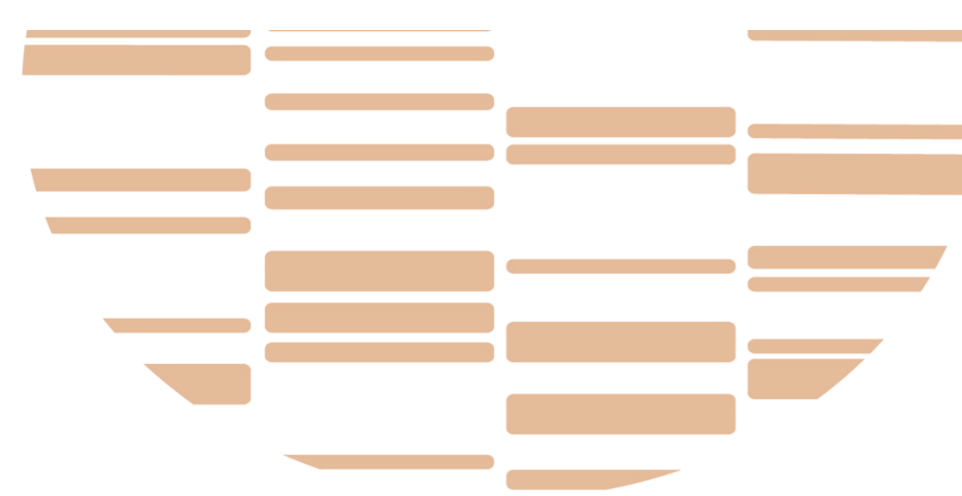
MicroBio Team
Microbiology of milk
and egg sectors

Keywords
Staphylococcus aureus
Extracellular vesicles
Virulence
Mastitis

Funders



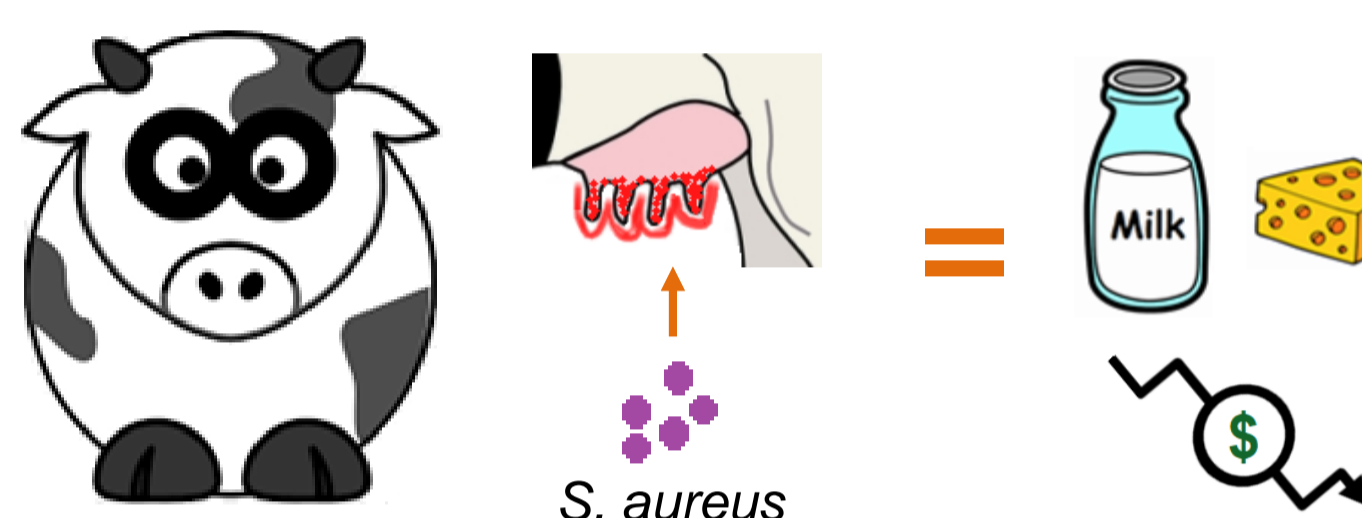
Collaborators



Impact of extracellular vesicles of *Staphylococcus aureus* N305 on the immune response of the host

Socio-economic context

- Mastitis, an inflammation of the mammary gland, is the most prevalent production disease in dairy herds worldwide affecting animal health and milk quality and causing economic losses.
- *Staphylococcus aureus* is one of the most important etiological agent of mastitis.
- Treatment against *S. aureus*-induced mastitis is still ineffective.



Scientific context

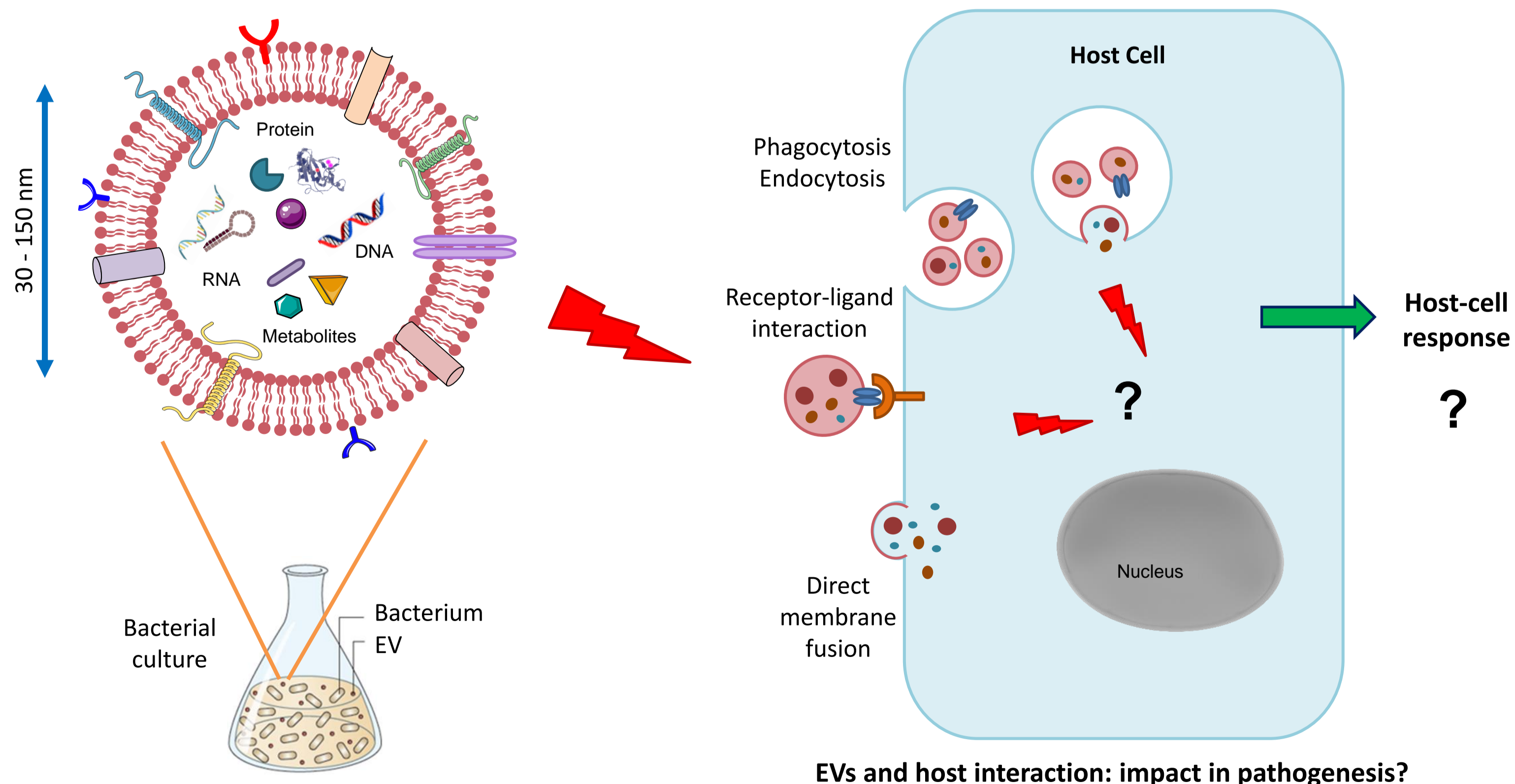
- A better knowledge on host-pathogen interactions is required to develop novel preventive or curative strategies against *S. aureus* mastitis.
- Extracellular vesicles (EVs) are nano-sized particles secreted by most cells and involved in intercellular communication.
- EVs secreted by *S. aureus* N305, a bovine mastitis isolate, induce the a pro-inflammatory response expression in vitro and promote tissue inflammation in vivo.
- Hypothesis: *S. aureus*-secreted EVs play a role in mastitis pathogenesis.

Research question

- How do EVs from *S. aureus* N305 strain impact the immune response of the host?

Expected results

- Identify eukaryotic genes and signaling pathways targeted and triggered by *S. aureus* N305 EVs in vitro (RNA-seq approach).
- Confirm the mechanisms of action of EVs in vivo by measuring expression of relevant genes activated in vitro in mammary gland tissues exposed to EVs.
- Investigate the role of EVs in *S. aureus* pathogenesis (bacterial-host interaction).



EVs and host interaction: impact in pathogenesis?

Perspectives

- Expand the knowledge about EVs produced by *S. aureus*.
- Improve the understanding of the interactions of EVs with host cells, bringing information about *S. aureus* mastitis pathogenesis.
- Provide molecular and functional data for the use of EVs as biotechnological agents, as for the development of vaccines or drugs to prevent mastitis.