

# Development of probiotics and post-biotics for the modulation of skin microbiome

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## STATE OF THE ART

Our skin is considered a true ecosystem, hosting a variety of microorganisms, with bacteria being the most abundant (*Actinobacteria*, *Firmicutes*, *Proteobacteria*, *Bacteroidetes*). These microorganisms are harmless or even beneficial to their host but, in some conditions, resident microbiota can become pathogenic. Many skin diseases, indeed, are associated with dysbiosis but also with an altered gut microbiome. This relationship is referred to the gut-skin axis, highlighting the bidirectional connection between the gut microbiome and skin health. In recent years, there has been increasing interest in using probiotics and postbiotics to improve human health.

## PROJECT

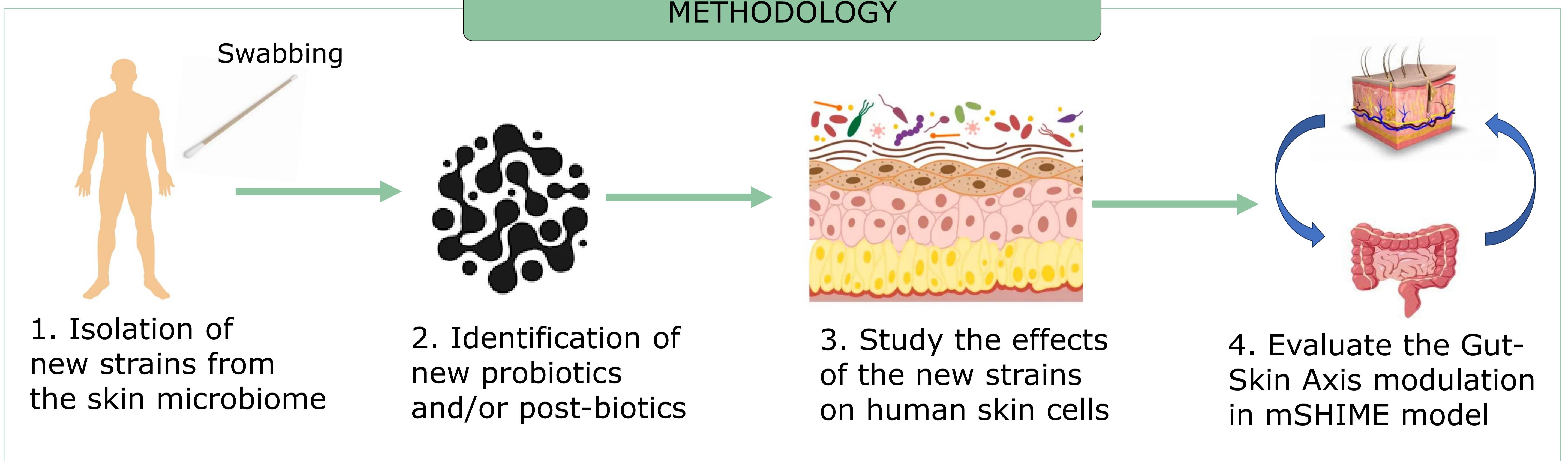
This PhD project aims to isolate new strains from the skin microbiome, characterize them and study their metabolism and common interactions. The main goal is to use these new bacteria as probiotics (living bacteria) or post-biotics (dead bacteria or their metabolites), even after genetic engineering, evaluating their beneficial effects on the skin microbiome. Another purpose is the discovery of a natural inhibitor for some skin pathogens. Ultimately, the research will identify the possibility of modulating the gut-skin axis through the administration of probiotics using the mSHIME model.

## MILESTONES

## TIME FRAME (3 YEARS)

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	2023-2024			2024-2025			2025-2026		
	Q1	Q2	Q3	Q1	Q2	Q3	Q1	Q2	Q3
Literature review	→								
Isolation of New Strains from the Skin Microbiome	→								
Engineering potential probiotic bacteria	→								
Human Cell Line Testing	→								
Evaluate the Gut-Skin Axis Modulation in mSHIME model	→								
Writing and Editing	→								

## METHODOLOGY



## REFERENCES

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