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Promoting cooperation between lactic acid bacteria within a community: towards new food applications

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► To cite this version:

Fanny Canon. Promoting cooperation between lactic acid bacteria within a community: towards new food applications. STLOpendays, Institut National de Recherche Agronomique (INRA). UMR UMR INRA / AgroCampus Rennes : Science et Technologie du Lait et de l'uf (1253)., Mar 2019, Rennes, France. hal-02098687

HAL Id: hal-02098687

<https://hal.science/hal-02098687>

Submitted on 5 Jun 2020

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Scholarship
•
2018-2021



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Team
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Key words

Lactic acid bacteria
Interactions
Cooperation
Cross-feeding
Syntrophy
Communities
Co-culture
lupin
Milk

Funding



Collaborators

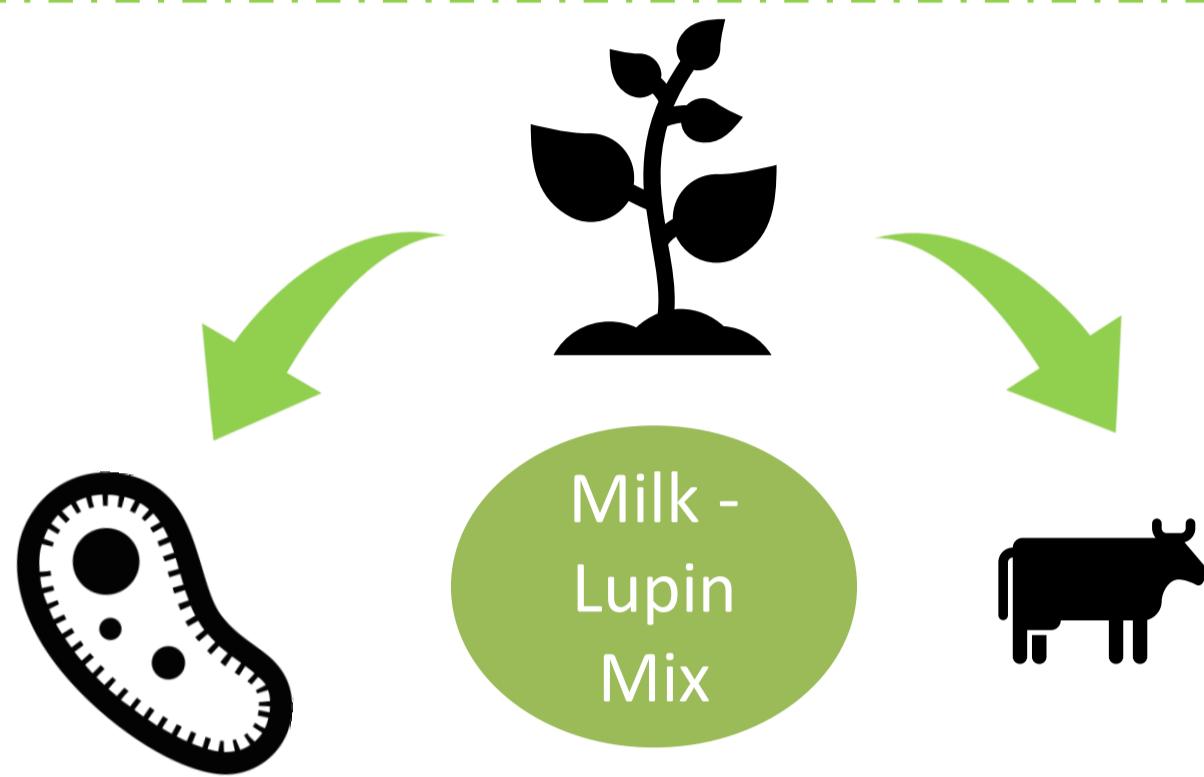


Promoting cooperation between lactic acid bacteria within a community : towards new food applications

Socio-economic context

- Pulses production : + **90 %** in France and EU between 2013 - 2017

Functionalities of **plant proteins** = new applications



Fermentation :

- Little energy required
- Nutritional qualities improvement

Reduction of animal protein consumption

Sustainable and healthy mixed food systems

Scientific context

- Communities are studied in several fields :



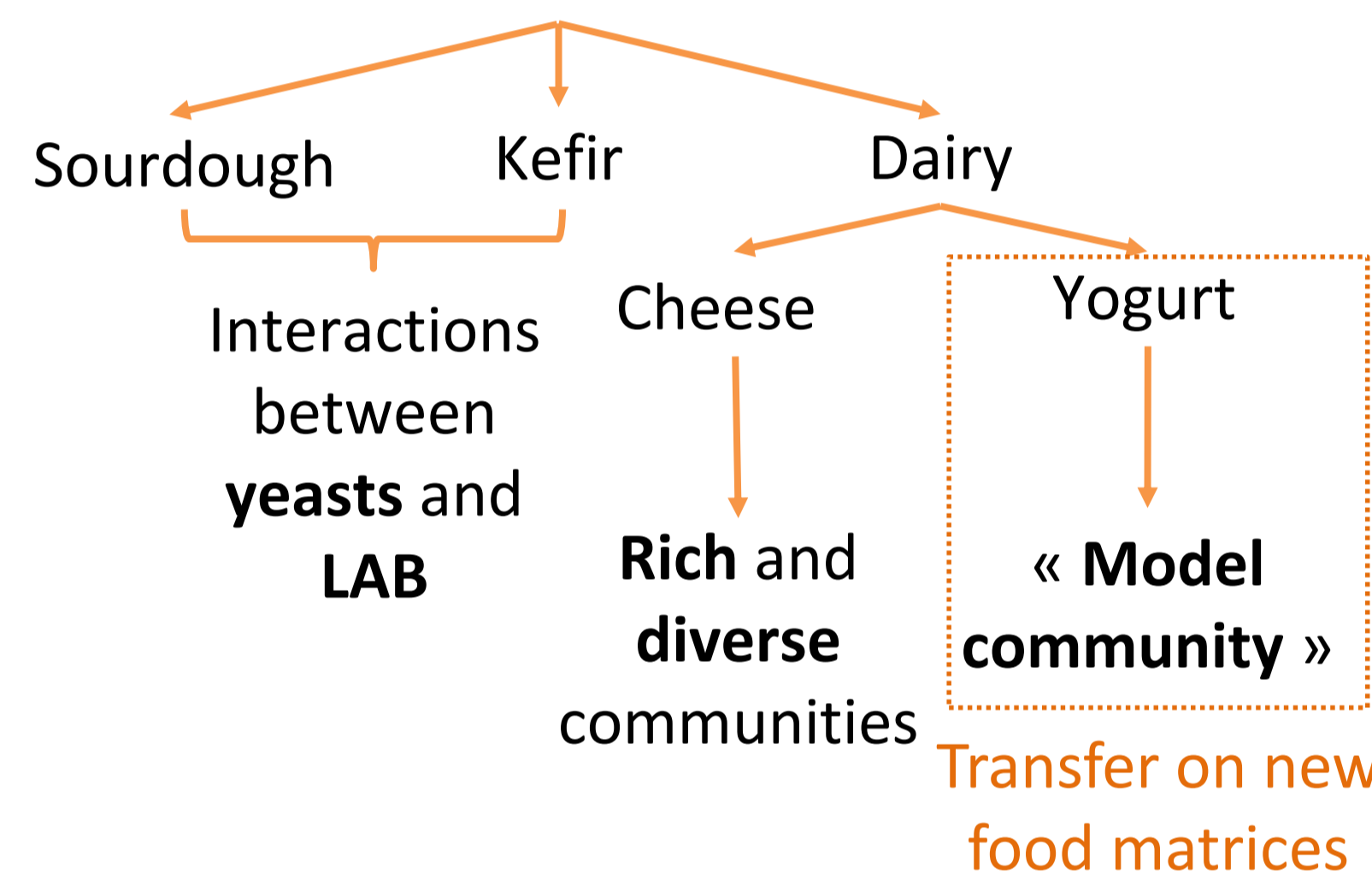
Bioprocesses : Development of synthetic communities to increase yields



Natural ecosystems (intestinal, soil, oceans, lakes microbiota) : Studies of 1) microbial composition and its evolution, 2) interactions with host/environment



Fermented food products



Research questions

- I. What parameters **favour positive interactions** between LAB within a community ?
- II. What are the cooperation **mechanisms** ?
What are the **molecules** exchanged during these interactions ?
- III. Have these interactions beneficial effects on the **nutritional and organoleptic properties** of a fermented milk-lupin mix ?

Expected results

- Association of LAB based on their **metabolic complementary** induces cooperative behaviour within a community
- Exchanges between LAB are partially linked with their nitrogen metabolism
- Increase in **aromatic/flavour compound** production
- Reduction of **allergens**

Research perspectives

- Knowledge transfer to multiple raw materials
 - Development of new **plant-based fermented products**
 - Development of innovative **functionalized** fermented products