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To cite this version:
Maxime Lecomte, David Sherman, Hélène Falentin, Clémence Frioux, Simon Labarthe. Modelling metabolic network dynamics in a cheese bacterial community. CMSB, 19th International Conference on Computational Methods in Systems Biology, Jul 2021, Bordeaux, France. hal-03533804

HAL Id: hal-03533804
https://inria.hal.science/hal-03533804
Submitted on 19 Jan 2022

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Modeling metabolic network dynamics in a cheese bacterial community

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19th International Conference on Computational methods in Systems Biology - 2021

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Modeling metabolic network deciphers interactions in a bacterial community

- Bacterial communities occur in every environment and are also important in industrial processes.
- Reveal interactions in a microbiota --> model the metabolism
- Study small cheese bacterial community --> small-scale controlled model
Integration of multi-omics data in the pipeline

Figure 1: Pipeline used to run simulations on the small bacterial community (is being automated).
Interactions highlighted at the community scale

- Same interaction bacterium-bacterium are highlighted with metabolic modeling, tools [6] and literature

- Production of lactate by Lactic acid bacteria creates a mutualistic interaction with P. freudenreichii responsible of the production of organoleptic compounds

Figure 2: Preliminary results of dFBA on the whole community.
Modeling metabolic network dynamics in a cheese bacterial community

• Thanks for your attention

Figure 3: Comparison of growth rate of freudenreichii