

**The authenticity of our cheeses examined by researchers**

November 28, 2017

Has this ever happened to you: you find a great cheese from Quebec you can’t wait for your friends to try, only to find it no longer tastes the same? That’s a product variation problem, and it happens fairly often in the cheese industry.

Several factors can explain differences in the quality of a cheese, whether it is due to the physico-chemical or microbiological composition of the milk used, the environment of the cheese factory or the transformation processes used. This can cause a change in texture, colour, smell or taste. Fortunately, master cheesemakers are often able to use their unique know-how to take advantage of these variations in the production of their cheeses.

**Natural Microflora**

The natural microflora present in the ripening cellar is one of the predominant factors in the typicality of cheeses, but is very difficult to control. In the case of fine cheeses, this microflora is composed of bacteria, yeasts and even moulds, and is added to the ferments used by the cheesemaker. Through their metabolism, these microorganisms use the nutrients available in the cheese matrix and release new products and aromatic compounds.

In some cheeses, there are more than 1,000 different species of microorganisms, making changes difficult for researchers to predict.

**Identifying the Species Present**

A better identification of the species involved and their activities would allow a better understanding of the ripening process. This implies distinguishing the species present in cheeses to determine their importance (useful or harmful) and to evaluate their influence on the cheese-making parameters.

Recent developments in genomics research could provide the opportunity to take a new look at this microflora, which may contain several hundred species. The principle consists in analyzing all the DNA found in cheeses and linking it to the activity of each species. In this way, we can identify which species are present and establish their functions. By listing the microorganisms, we can also associate them with the typicality of certain cheeses. This work is currently underway in our laboratories, with the objective of determining the microflora profile of some twenty Quebec farm cheeses.

This genetic characterization allows us to gain a better understanding of the cheese ecosystem and thus to better control it. Combined with the know-how of master cheesemakers, this knowledge will make it possible to offer high quality cheeses on a more consistent basis. This way, the next time you have friends over, you can continue to impress them with delicious cheese from Quebec.

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| **Changes That Are Hard to Predict** The changes that occur in cheese are hard to predict, largely because we know very little about the microorganisms in them. Until recently, traditional microbiology tools only gave us a partial picture of their contribution. |

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Traduction libre du document [L'authenticité de nos fromages sous la loupe des chercheurs](https://www.laterre.ca/du-secteur/formation/lauthenticite-de-nos-fromages-loupe-chercheurs)