

## **Optimization of flavour formation in hard cheeses**

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### **Aim**

We want to find solutions so that the mesophilic starter can operate successfully at elevated cooking temperatures. We plan to use several approaches, where one involves changing the cheese fermentation process by removing oxygen. We know from our previous research that the presence of oxygen is detrimental for *L. lactis*, the dominant organism in mesophilic starters. We also wish to optimize the mesophilic starter in different ways to accommodate its use at elevated temperatures. For instance the effect of different additives or changed growth conditions prior to inoculation in milk will be studied. Finally, we want to create more temperature-robust versions of the mesophilic starter through adaptive evolution/random mutagenesis. In collaboration with ARLA Foods the novel processes/starter cultures will be tested in cheese trials.

### **Description**

Hard cheeses are normally made using thermophilic starters because of the high cooking temperatures (>39°C) involved. Mesophilic starters cannot presently be used because the high temperature would affect the subsequent acidification and flavor formation. Thermophilic starters tolerate the high temperature, but are unable to produce some of the desirable flavor compounds produced by their mesophilic counterparts. In this project we wish to study whether this problem can be solved by changing process parameters and/or starter so that harder cheeses can be made using mesophilic starters.