

Cheese: New insights into an age-old food

August 14 2020



The research looked at the microbiology of cheeses from around the world.
Credit: Bord Bia

The most detailed study to date of the microbes in cheese was published today in *Nature Food* by a team of researchers at Teagasc and APC Microbiome Ireland SFI Research Center, led by Professor Paul Cotter. For this study, the team employed the most advanced DNA technologies to characterize in great depth the microbiology of 184 samples of

cheeses from across the world, including newly studied samples from 55 cheeses that were sourced from artisanal cheese producers from across Ireland.

The analysis provided new insights into the [microorganisms](#) found in cheese, the links between microorganisms and specific desirable and undesirable flavors and the arsenal of antimicrobials that starters and other cheese microorganisms produce to naturally preserve cheese. The study also provides an intriguing insight into the battle between phage (viruses that infect bacteria) and cheese microorganisms, and associated anti-phage countermeasures.

Cheesemaking stretches back millennia and cheese remains an important component of the diet of many. Originally, cheese was made as a means of preserving milk, with lactic acid and other by-products of growth that are produced by microorganisms during the [fermentation process](#) extending its shelf-life, and contributing to flavor, appearance and aroma.

Scientists have been studying these microorganisms and their activities since the 19th century and eventually began to try to better control the process in some instances through the conscious addition of specific microorganisms, known as "starters," to start the cheesemaking process. Studies have also focused on trying to identify and control the growth of other, undesirable, microorganisms that contribute to off-flavors or [food poisoning](#) as well as phage, which are viruses that can attack and kill starters.

"The application of these cutting edge approaches has revolutionized our understanding of the microbiology of cheese and provided insights that are relevant to the vast number of microbial communities that impact on the [food chain](#) and human health," says joint first author Dr. Aaron Walsh.

"This work would not be possible without the fantastic contribution of artisanal cheese producers of Ireland, who show such dedication and devotion to the production of cheese of the highest quality," says joint first author Dr. Guerrino Macori.

"This study has the potential to be of tremendous value to the [cheese](#) industry. A better understanding of the microbiology involved can lead to the better harnessing of microbes that can positively impact on flavor and other qualities. This could allow the most desirable qualities of artisanally-produced cheeses to be made available to even wider markets. It also has broader implications for the whole fermented food field where the same technologies can be employed in a similar way and scale," explains Professor Paul Cotter.

More information: Aaron M. Walsh et al. Meta-analysis of cheese microbiomes highlights contributions to multiple aspects of quality, *Nature Food* (2020). [DOI: 10.1038/s43016-020-0129-3](https://doi.org/10.1038/s43016-020-0129-3)

Provided by Teagasc

Citation: Cheese: New insights into an age-old food (2020, August 14) retrieved 23 June 2024 from <https://phys.org/news/2020-08-cheese-insights-age-old-food.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--