

# health&hygiene BYTES

Your own reference source on breeder health

## No.1 Bacteria

A key criterion that internal or external customers use for assessing their supplier is the production of fit and healthy day old chicks. This series of articles will look at various facets of health and hygiene pertinent to the hatchery and the breeder farm, and the way in which these may impact on the health and performance of day olds.

**Construct your digital library on hatchery health & hygiene**

To receive your regular updates please send your email address to:

[bytes@positiveaction.co.uk](mailto:bytes@positiveaction.co.uk)



Best

Henke-Sass Wolf

Jamesway

Mirius

Pak Tavuk

SASSO

- Veit
- Dominant
- Pas Reform
- Victoria
- Impex
- Fiem
- EmTech

Bacteria are the main cause of many hygiene problems in the hatchery, as well as causing quite a few important diseases in breeders. Before considering the specifics, let us describe bacteria in general terms.

Bacteria are microscopic, single-celled organisms that thrive in diverse environments. These organisms can live in soil, water, and inside the digestive tracts of humans and animals. They have been found in unusual environments, like the geysers and hot springs in New Zealand and California, USA. There are many different types of bacteria and none of them live in every possible habitat, rather it is the case that over time different bacteria have evolved and colonised certain, specific habitats.

Our relationships with bacteria are complex. Sometimes bacteria can be beneficial, for example in septic tanks; the manufacture of antibiotics; and within yoghurt manufacturing to aid our digestive processes. Conversely, they can be harmful to man. Various rotting processes, such as in the deterioration of food can cause diseases like tetanus and certain pneumonias. Bacteria may also be carriers of antimicrobial resistance (AMR).

Bacteria can be regarded as microscopic animals. All the biological functions found in larger animals are also found in bacteria, including digestion, respiration, reproduction, processing, movement, and the disposal of waste materials.

### Prokaryotes

More specifically, bacteria are prokaryotes. Prokaryotes are single celled organisms that do not have a nucleus – their DNA is either free floating as a twisted, threadlike mass, or it is present in separate circular pieces called plasmids. Also present in the bacterial cell are the ribosomes where proteins are assembled from amino acids using the ribosomes' encoded information.

Typically, bacteria are surrounded by two protective coverings – the outer cell wall and inner cell membrane. However, some bacteria do not have the outer cell wall. A good example of this is mycoplasma which is associated with some important diseases in breeders.

Some other bacteria have a third, outermost membrane which is known as the capsule. On the surface of many bacteria are whip-like appendages of differing lengths. The long appendages are called flagella and the shorter ones are known as pili. These structures help the bacterium to move about – usually in water films – and to attach to surfaces.

The outer cell wall plays a key role in the Gram test. This test differentiates bacteria on the basis of the presence or absence of a cell wall. Those with a cell wall which picks up the stain are called Gram positive, whereas those without a cell wall cannot pick up the stain and are Gram negative.

Early scientists were limited in their study of bacteria due to the rudimentary nature of their tools. They effectively only had one tool – the light microscope – so they could only really observe the shape of bacteria. Thus, many of the first bacteria observed were named according to their shapes.

These names include 'cocci' for those bacteria which under the microscope appeared as small spheres, and 'bacilli' for those which appeared to be rod-shaped. These words could be logically combined with 'staphylo' (cluster) and 'strepto' (chain).