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## Bacterial growth and multiplication

Bacterial growth and multiplication can occur inside an animal (often associated with disease or normal gut flora) and outside an animal, providing key prerequisites, such as food, water and the right temperature, are available.

Under perfect conditions certain bacteria can multiply (double their numbers) every 10 minutes. Thus, after two hours (120 minutes) one bacterium has the potential to become 4,096 – so imagine the number that will be there after 24 hours! Mathematically the figure is  $2^{144}$  which is 2 x 2 144 times!

This is made use of in the diagnosis of diseases by bacterial culture, in which samples of tissue are smeared over an appropriate agar plate and incubated for 24 or 48 hours. Any bacteria present become a great heap of bacteria known as a colony. A colony, in effect, contains clones of the original bacterium and so can be used for identification purposes.

This growth outcome can be less if the temperature is not ideal or if food and water shortages occur. In addition, the waste products need to be removed from the multiplying bacteria or the bacteria can be poisoned by their own waste products.

## Bacterial survival outside the animal

As bacteria can multiply outside the host animal they can maintain viable populations in the environment – providing the location offers suitable conditions, such as food, warmth, water and protection from adversities. Thus, ideal conditions would be warm, wet and dirty with protective hiding places.

Any poultry house at the end of a cycle of production will be an ideal environment for bacterial survival. Therefore, an effective terminal cleaning, disinfection and drying programme is essential at the end of each cycle to prevent/minimise the carryover of bacteria into the next cycle.

Some bacteria, for example Salmonella enteritidis, can infect the mouse population and then be seeded into the next production cycle via mouse droppings. Thus, it is prudent for any terminal cleaning programme to include removal of vermin from the poultry house.

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