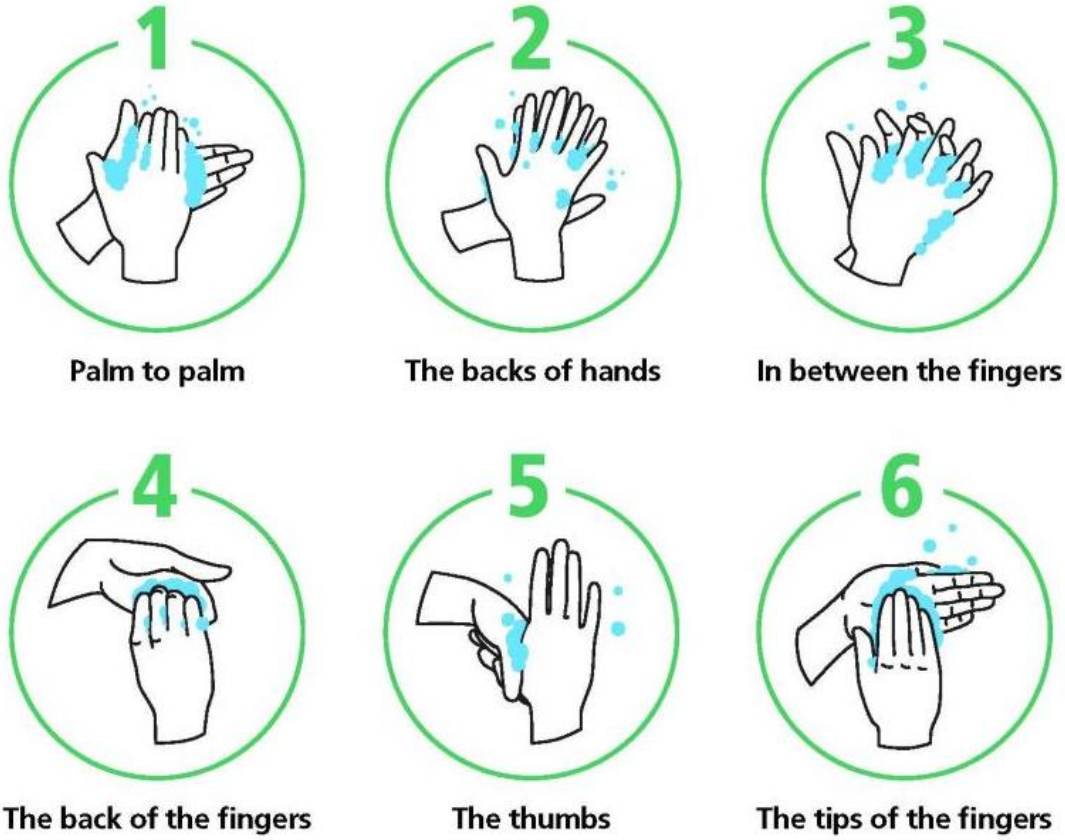
Bubbleology

Why is it important to wash your hands?

Oxford Brookes researcher and hand hygiene expert Dr Mamdooh Alzyood explains that our hands act as a highway for viruses and bacteria to be spread. By washing our hands properly and at the right time (e.g. after we've been to the toilet and before we eat) we can protect ourselves from dangerous microorganisms.

How do you wash your hands properly?

In order to wash your hands properly to remove potentially harmful bacteria and viruses you must use running water, soap, the correct washing technique (shown below) and wash your hands for at least 20 seconds.



OXFORD BROOKES UNIVERSITY

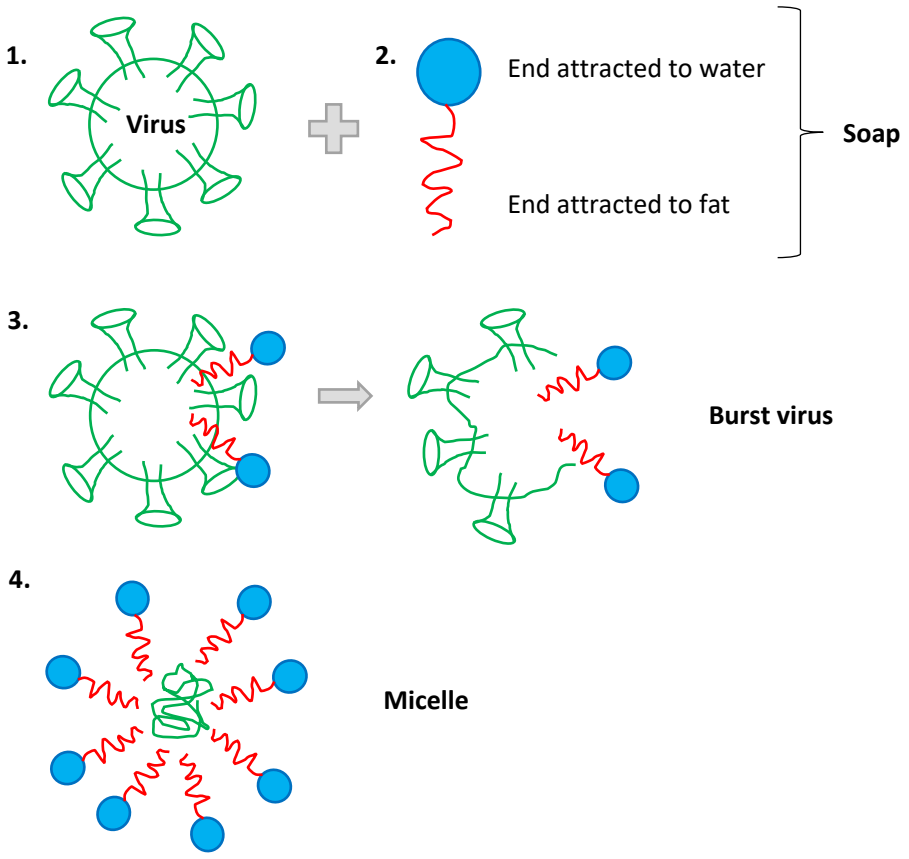
SCIENCE BAZAAR BEYOND

What is the science behind handwashing?

Bacteria and viruses are surrounded by a layer of sticky stuff called proteins and fat, which makes them really good at sticking to all types of surfaces – including your hands! The layer of fat around the microorganism acts as a protective coating against water. Fats and water don't mix very well on their own, so when you wash your hands with just water, the water runs straight over the top of the fat – and straight over the microorganisms!

Soap is special as it is made up of molecules with two very different ends. One end of the molecule is attracted to water and the other end is attracted to fat. This means that when we use soap to wash our hands it binds to the fat around the microorganisms and bursts them by breaking apart their fatty outer layer. Soap molecules surround the microorganisms removed from your hands, forming "micelles". The water then washes away the soap trapped microorganisms from your hands.

It takes 20 seconds for the soap to burst that fatty layer surrounding the microorganism, so it is important to make sure you wash your hands for at least 20 seconds.



1. Microorganisms are surrounded by sticky fat and proteins. 2. The molecules in soap have two different ends, one that is attracted to water and the other which is attracted to fat. 3. The end attracted to fat sticks to microorganisms and bursts them open! 4. The soap molecules surround the burst microorganism particles forming a micelle which can easily be washed away.