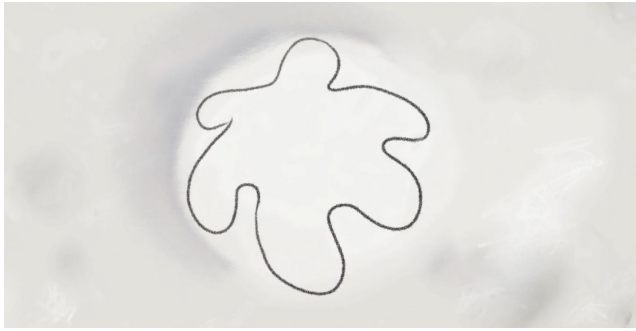


# BEHIND THE SIGNAL

## LOOP



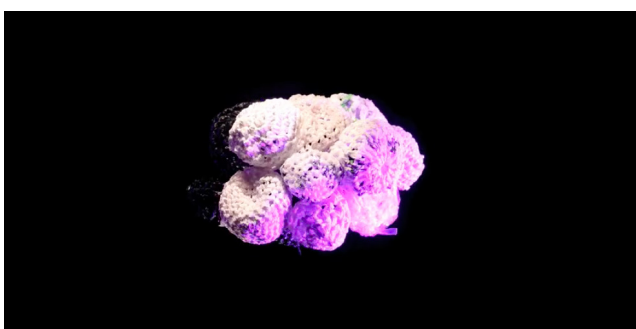
## HOST DEFENCES

The body defends itself against pathogens in many ways. Barriers, like skin and mucus, help to stop bugs from getting into the body, and specialised cells patrol the tissues looking for any bugs that make it through. Some defence systems are broad and indiscriminate, while others are very specific and targeted. Autophagy is a recently discovered mechanism used against bacteria that have invaded a host cell.



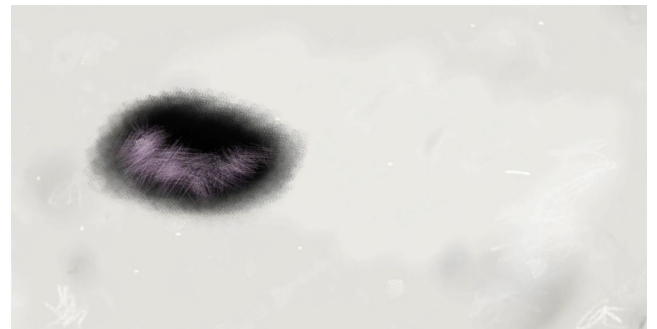
## "THIS IS NOT TRUE! YOU HAVE CHANGED THIS, RIGHT?"

How septin rings detect and build a cage around bacterium remains a puzzle. Does one ring find a bacterium and extend around it as a spiral, or do multiple separate rings come together to form the cage? Using super resolution microscopy to show septin cages in ultra fine detail can provide an important piece of this puzzle. Here the animation is being updated to reflect the latest information as the data is being generated.



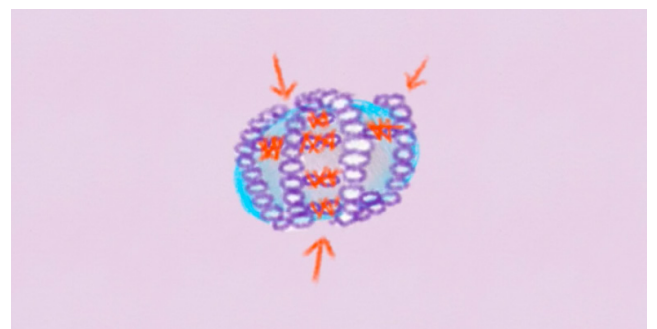
## CELL SHAPE

There are over 200 different types of cells in the human body. Their shapes vary from thin and flat like scales (squamous, skin) to being tall and thin (columnar, gut) or even star shaped (stellate, brain). These different forms help cells carry out specific roles and functions. Without the cytoskeleton to support them, none of these shapes would be possible.



## BACTERIA MOVEMENT

*Shigella*, the bug that causes bacillary dysentery, moves inside cells using a tail made of a protein called actin, but not all bacteria move in this way. Other extracellular bacteria make themselves slime coats to help them slide along. Some use spikes, called fimbriae, which help them grip onto cells, and some even have guidance systems to detect the Earth's magnetic field.



## THE EMPTY SPACE

The empty spaces in images can be misleading. Scientists choose to visualise a few elements at a time so they can focus on what they are specifically looking for. Some data collection tools may not be sensitive enough to reveal the whole picture. There will be thousands of processes happening in the same space, but they may not always be visible.