Antimicrobial Resistance Gallery

How can we fight AMR?

Disruption of functional membrane microdomains

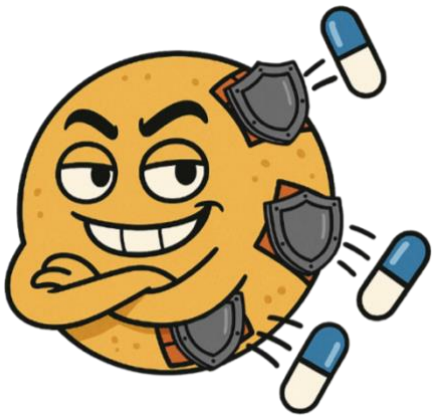
(Samuel García-Poveda)

Did you know bacteria have tiny walls?

Just like all living cells, bacteria are surrounded by a thin layer called a **membrane**. If we imagine a house, the walls of the house would be like the membrane, and the bricks would be the special fats (called **lipids)** that make up the membrane.

But walls aren't always the same everywhere, they can have windows, doors, or beams. In the same way, membranes aren't all the same either! Some lipids like to group together and form tiny special areas. Scientists call these "**membrane microdomains**" or "**lipid rafts**."

Now, here's the interesting part: just like we can hang pictures or clocks on the walls of a house, some **proteins** also stick to these lipid rafts! If you're not sure what proteins are, think of them as tiny machines doing all kinds of important jobs inside cells. In some bacteria, these proteins help protect them from **antibiotics**, like little shields that block the medicine!



One example is a bacterium called ***Staphylococcus aureus*** (or "**Staphi**" for short). He's a bit of a troublemaker! Staphi uses these lipid rafts to hold one of its strongest weapons against antibiotics. That way, it can keep growing and make us sick, even when we take medicine!

But don't worry, there's good news! Have you heard about grandparents taking medicine to lower something called **cholesterol**? Well, guess what? That same kind of medicine might also stop bacteria from building their lipid rafts. And if Staphi can't build its raft, it can't protect its weapons, so antibiotics can start working again!

Doctors haven't started using this trick with patients just yet, but scientists are working hard to learn more. And who knows? One day, this clever idea might help us beat **superbugs:** bacteria that are resistant to most medicines!