

Antibiotic Resistance

Biology

How resistance arises and spreads, and why it is inevitable.

The evolutionary mechanism.

1

Variation exists

Random mutation produces occasional resistant cells.

2

Selection pressure

The antibiotic kills the susceptible majority.

3

Resistant cells survive

And reproduce without competition.

4

The population becomes resistant

Within a few generations.

5

Horizontal transfer spreads it

Plasmids move resistance between species.

RESISTANCE MECHANISMS

Enzymes that destroy the drug — beta-lactamase

Efflux pumps

Altered target site

Reduced permeability

Horizontal gene transfer means resistance spreads between species, not just down generations. That is what makes it so fast.