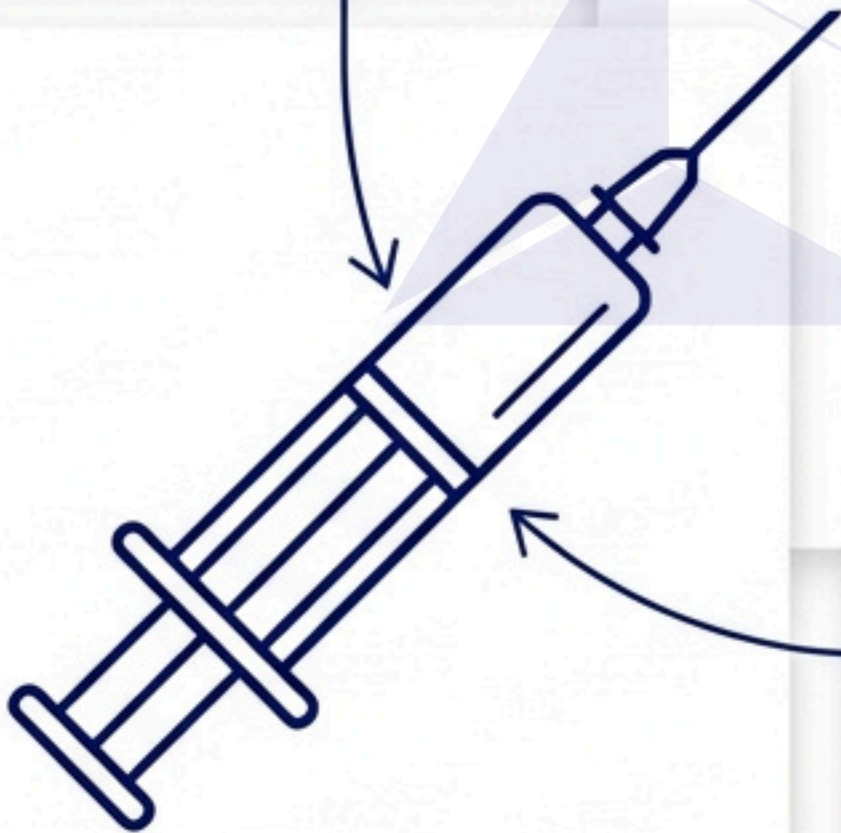
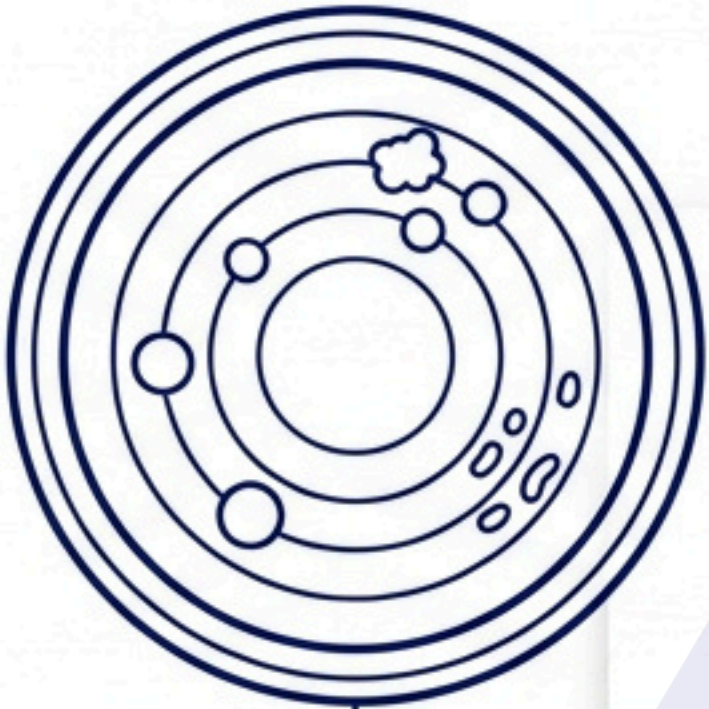
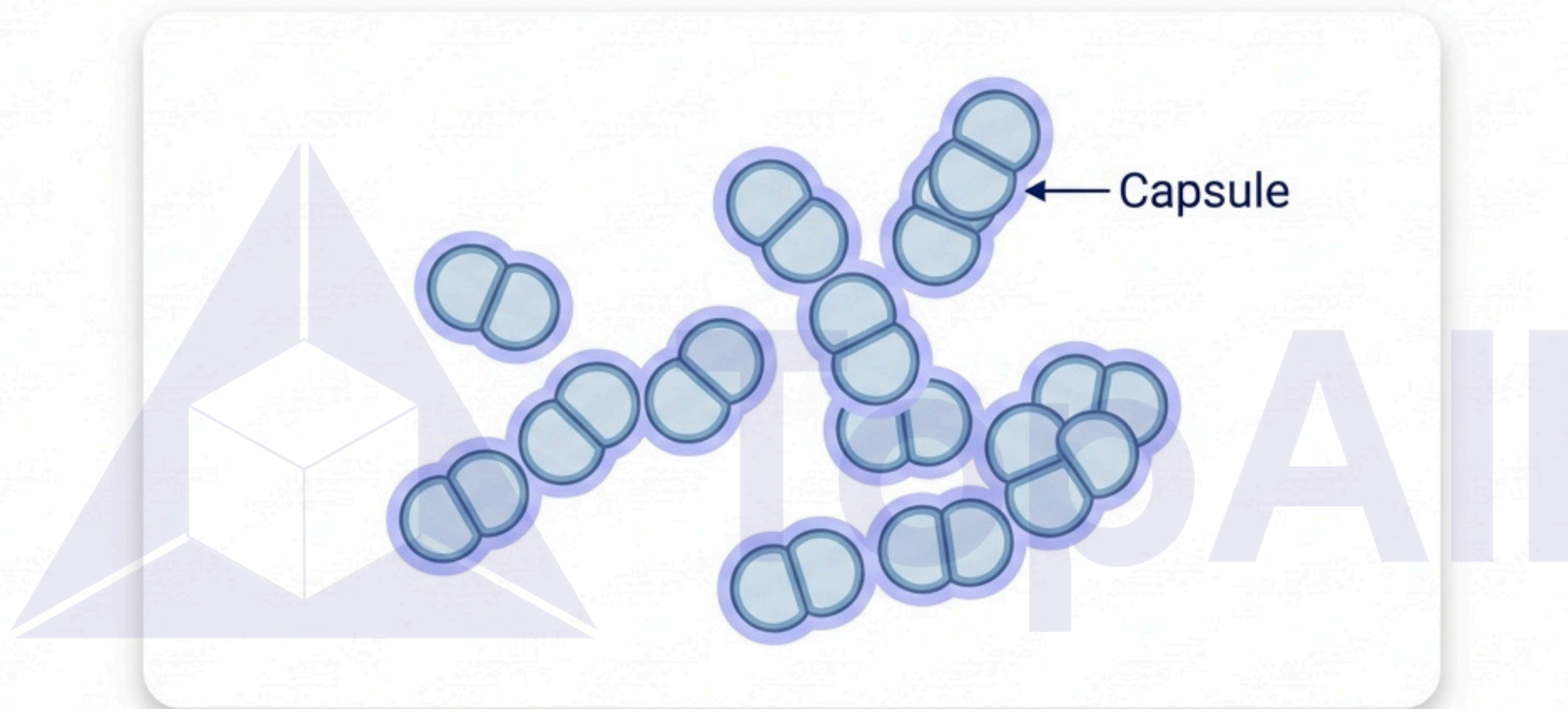


Griffith's Transforming Principle

The 1928 Experiment that Redefined
the Search for Genetic Material



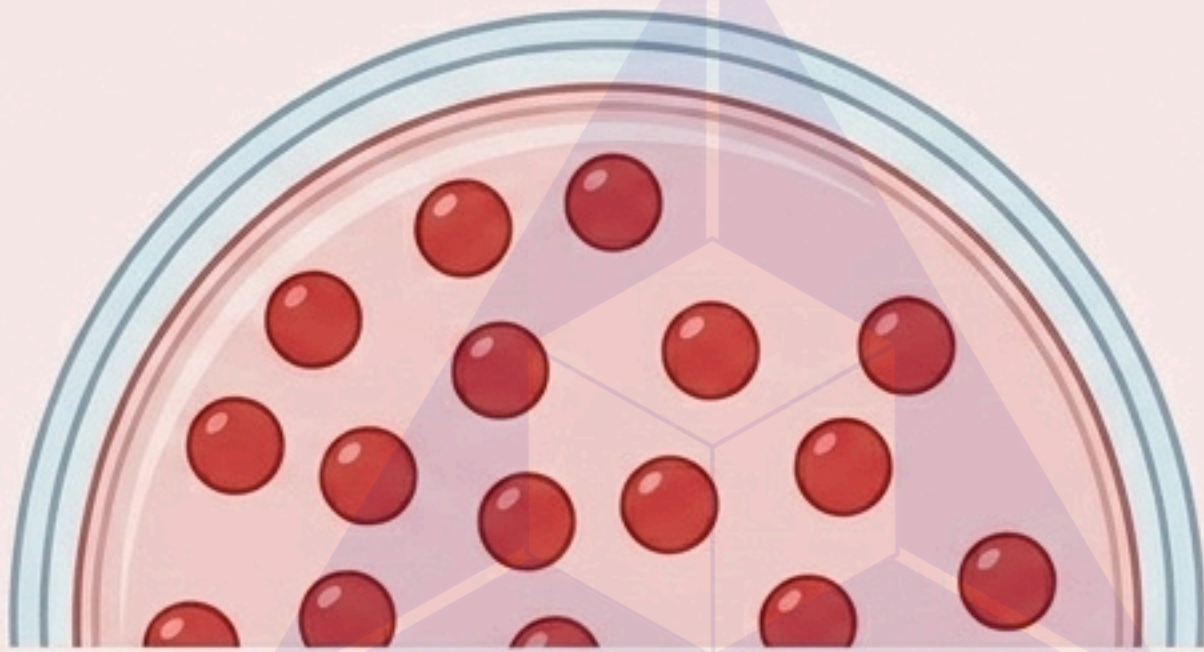
The Subject: *Streptococcus pneumoniae*



In 1928, the exact biochemical nature of genetic material was unknown. Frederick Griffith sought to understand the mechanisms of inheritance by studying ***Streptococcus pneumoniae***, the bacterium responsible for pneumonia infections in mice.

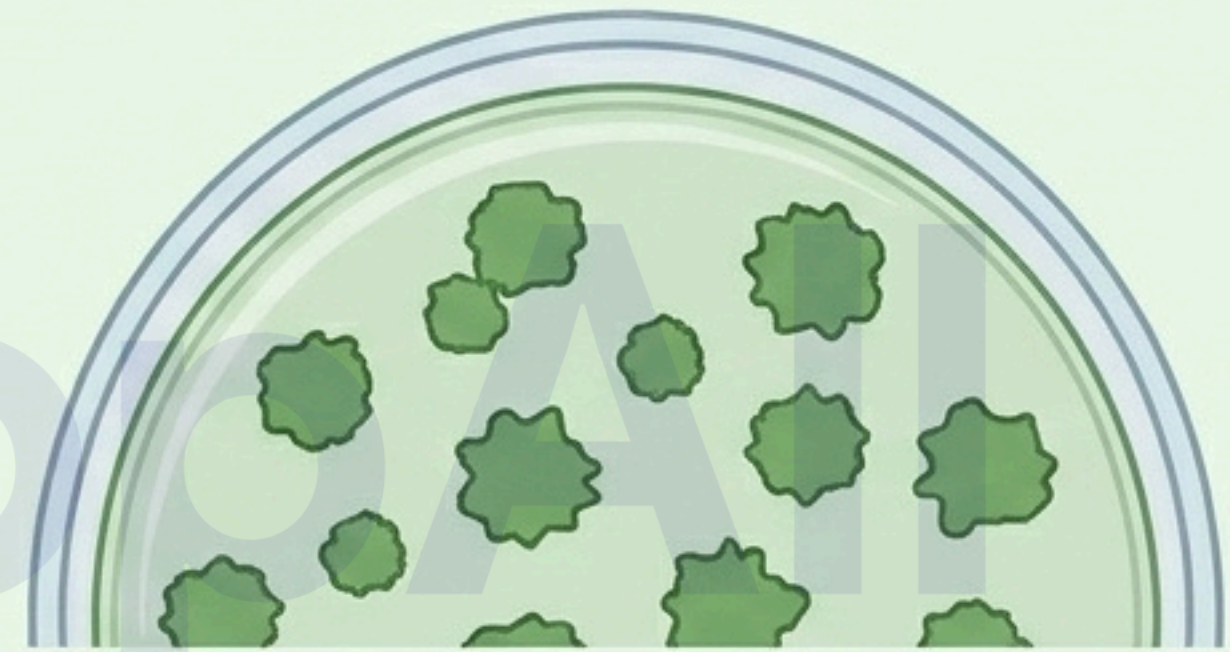
The Biological Actors: S Strain vs. R Strain

S Strain (Smooth)



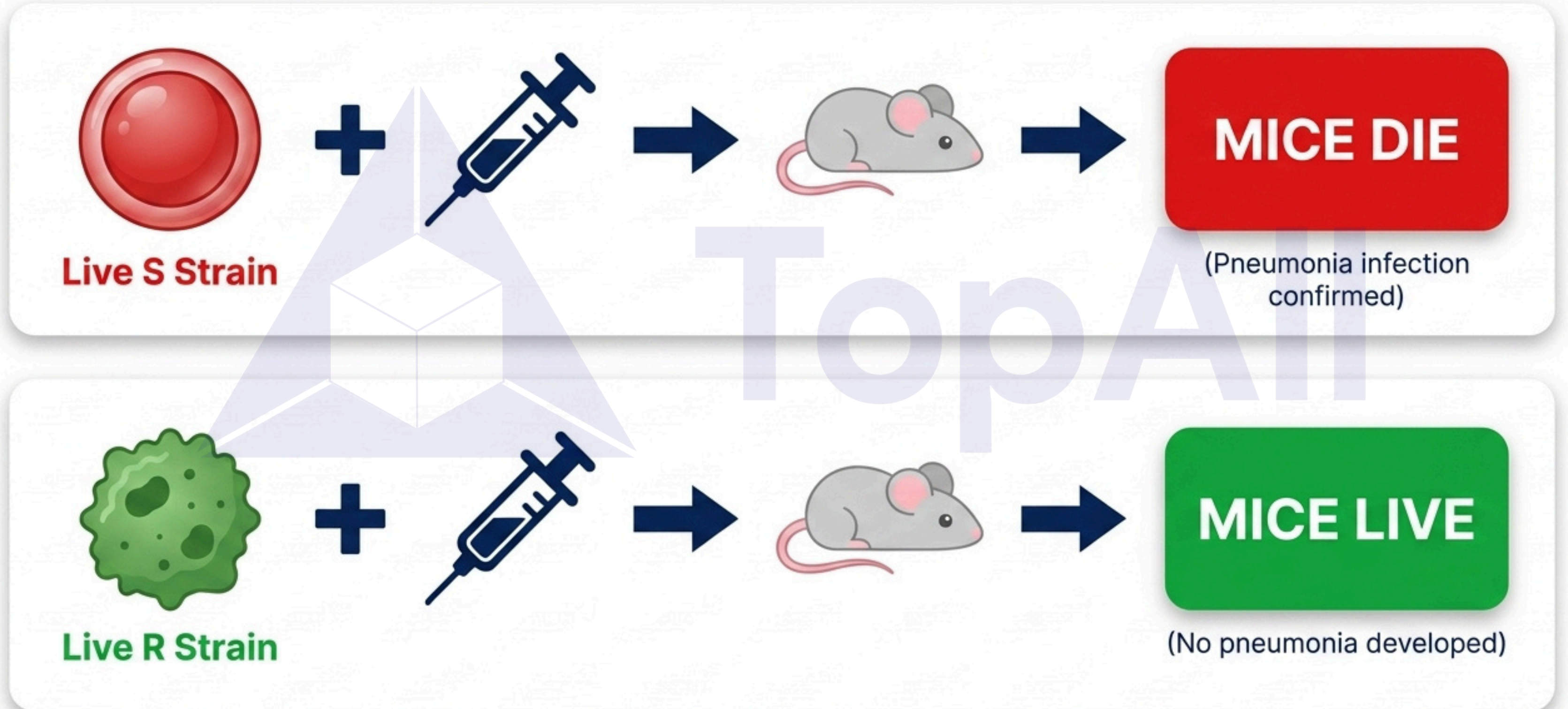
- Possesses a mucous (polysaccharide) coat.
- Virulent (disease-causing).

R Strain (Rough)



- Lacks a polysaccharide coat.
- Non-virulent (benign).

Establishing the Baselines





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$$E=mc^2$$



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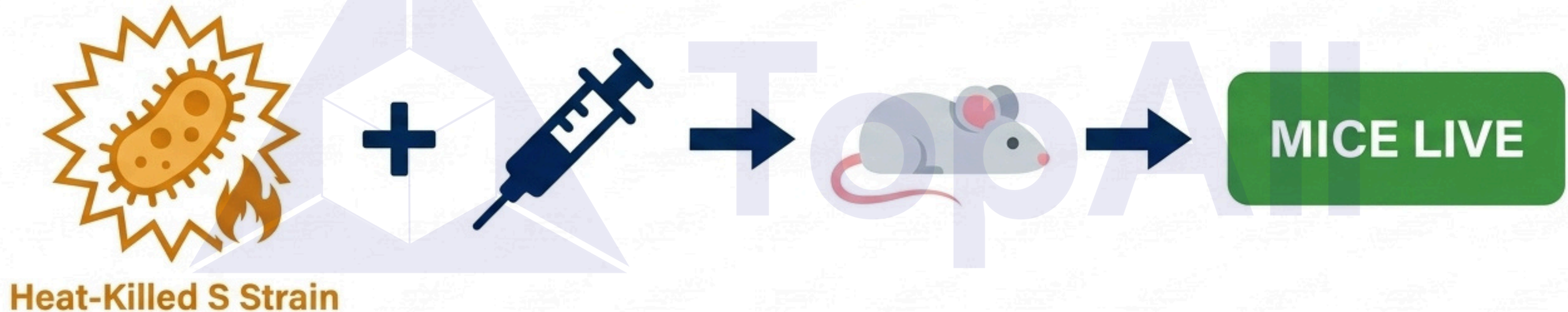
Key Highlights

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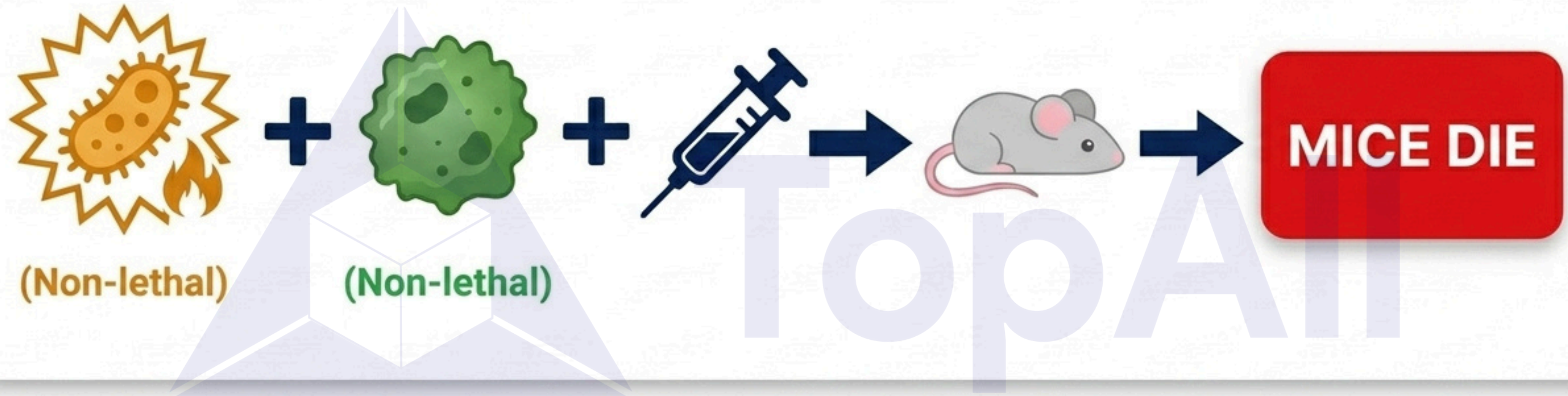
The Heat-Killed Modifier

Heat-Killed Condition: Griffith applied heat to destroy the lethal S strain bacteria before injection.



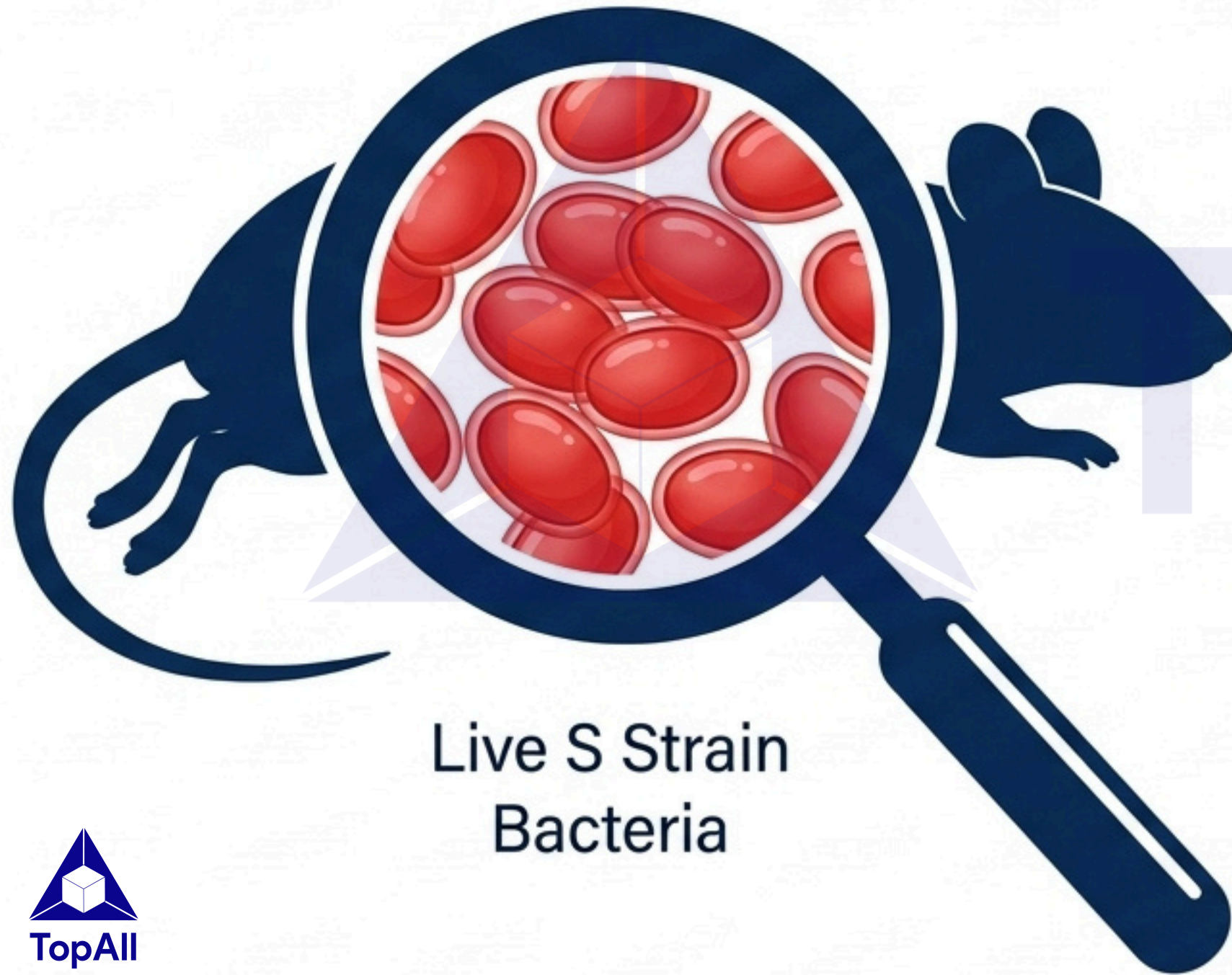
The lethal property of the S strain is completely neutralized when the bacteria are killed by heat.

The Experimental Anomaly



The Twist: A mixture of two completely non-lethal components resulted in a fatal pneumonia infection.

The Post-Mortem Discovery



Live S Strain
Bacteria

Griffith recovered living S bacteria from the dead mice.

The living organism had changed in physical form.

The live R strain had somehow synthesized the smooth polysaccharide coat characteristic of the S strain.

The Transforming Principle

Some “transforming principle” was transferred from the heat-killed S strain to the live R strain. This transfer enabled the R strain to synthesize a smooth polysaccharide coat and become permanently virulent.

Griffith concluded this transformation must be due to the transfer of genetic material—even though the exact biochemical nature of this material remained undefined at the time.



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