

A Microbial Future



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EST. 1597

GRESHAM
COLLEGE



*Prediction is very difficult,
especially about the
future...*



***THE NEXT GENERATION
(before 2050)***

***THE FINAL FRONTIER
(2051 and beyond)***



MICROBIAL MEDICINES



Penicillin

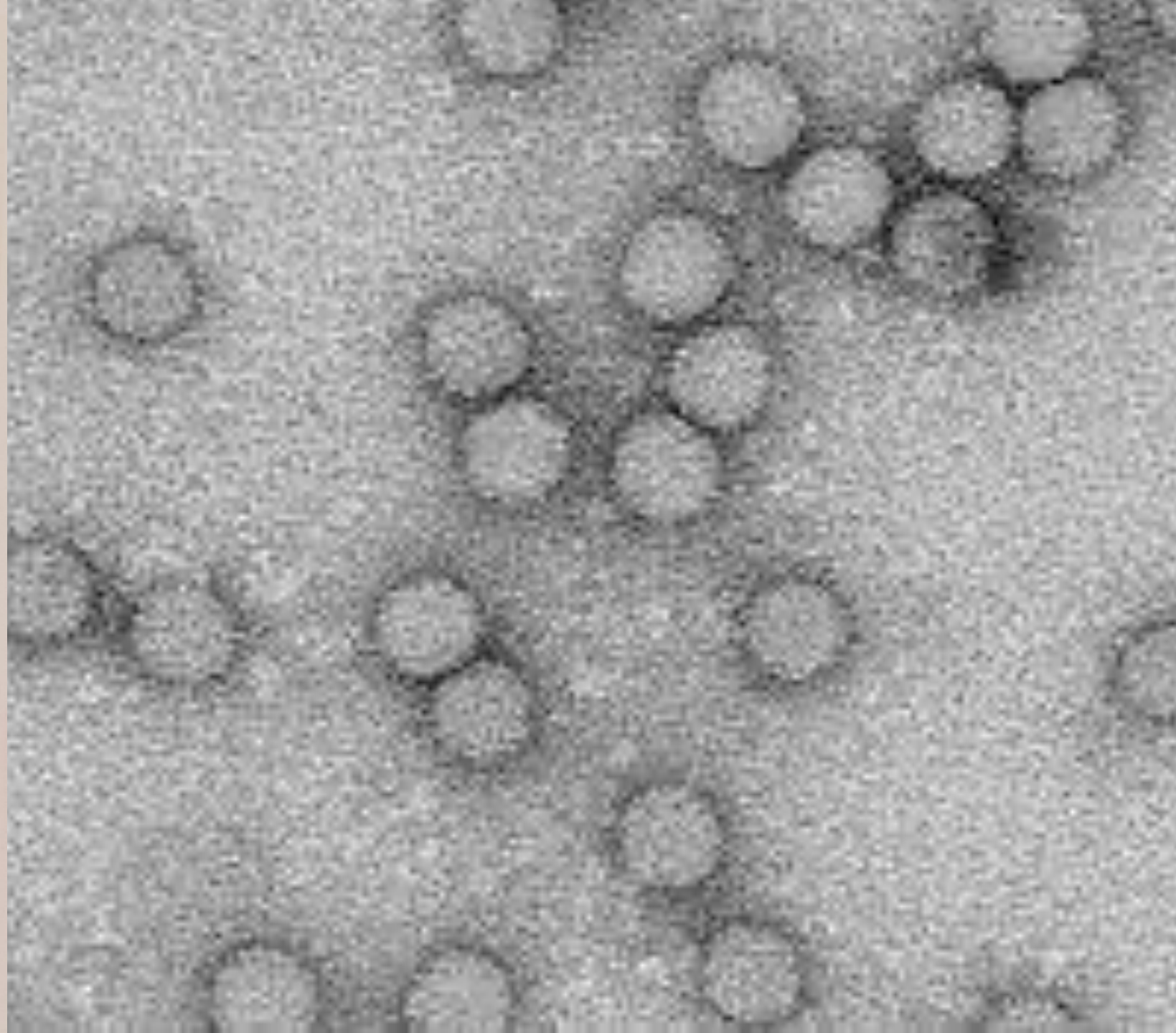
THE NEW LIFE-SAVING DRUG

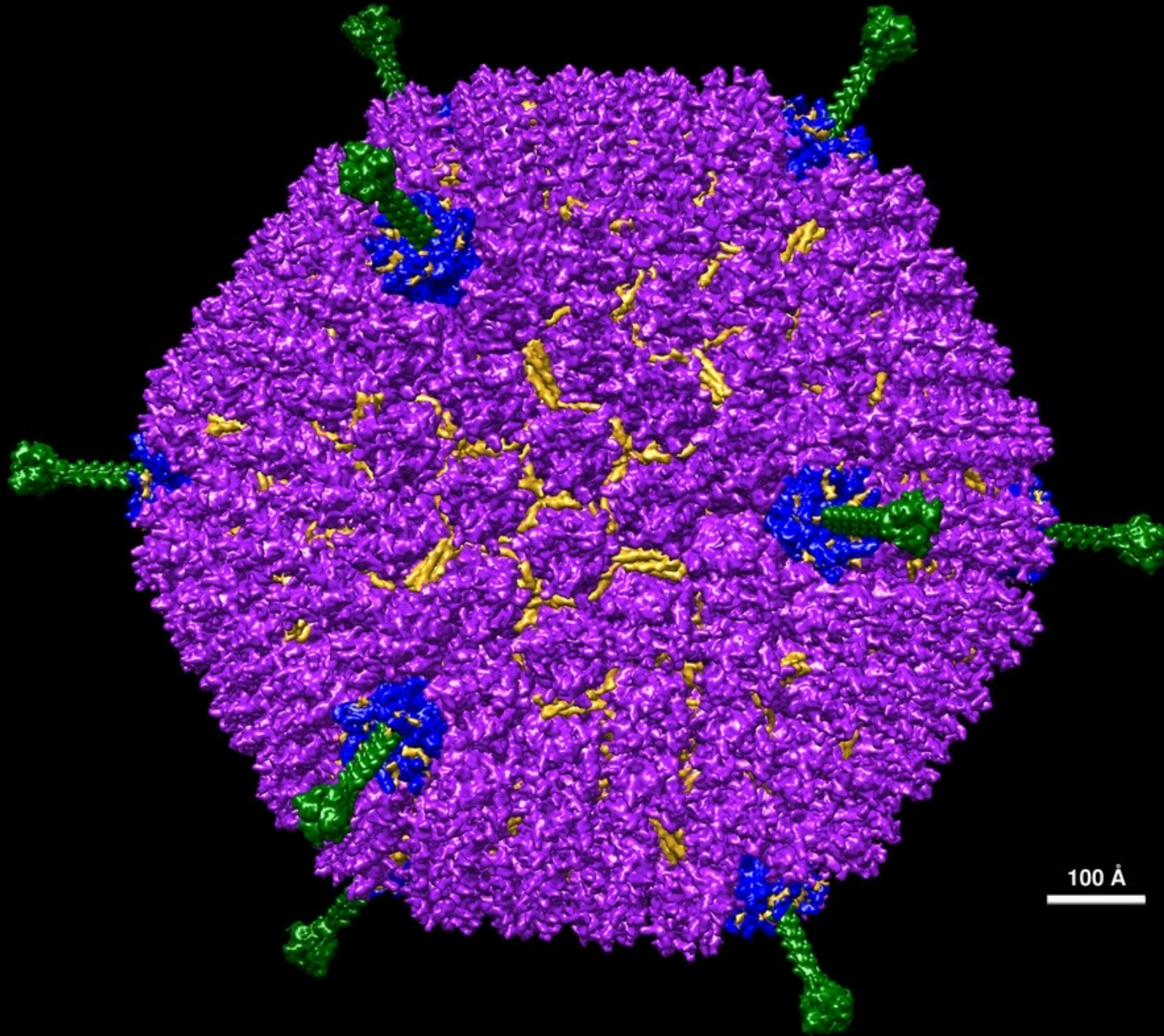
Saves Soldiers' Lives!



Men who might have died
will live...if YOU

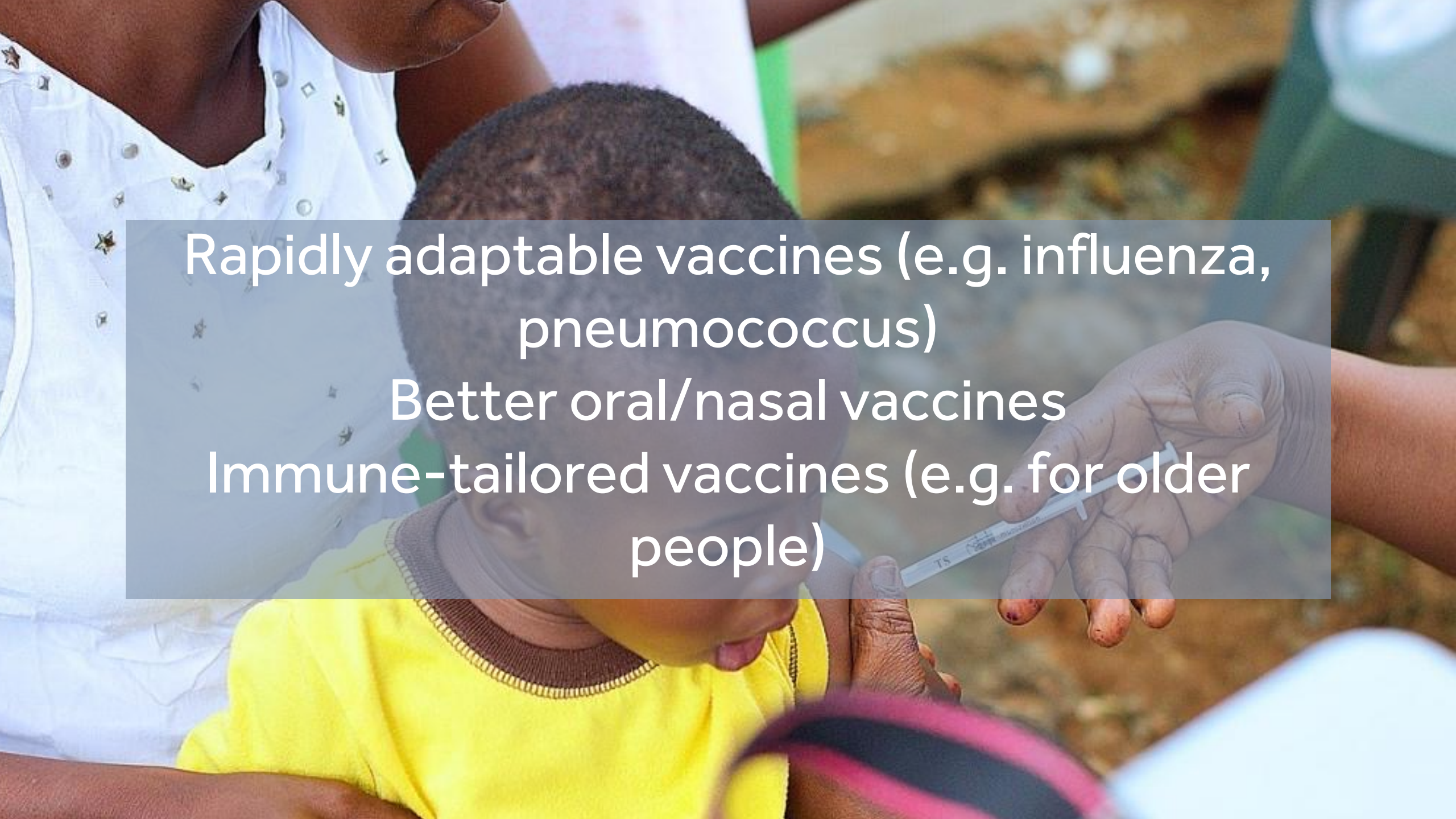
Give this job Everything You've got!





VIRAL VECTOR VACCINES



A close-up photograph of a young child with dark skin and short hair, wearing a bright yellow shirt, being vaccinated. A healthcare worker's hand is visible, holding a small syringe and injecting the child's arm. The child's mouth is slightly open. The background is blurred, showing other people and an outdoor setting. A semi-transparent grey box with white text is overlaid on the center of the image.

Rapidly adaptable vaccines (e.g. influenza,
pneumococcus)
Better oral/nasal vaccines
Immune-tailored vaccines (e.g. for older
people)



**A PREEMPTIVE
VACCINE LIBRARY**



**SELF-SPREADING
VACCINES**

Quarks



Injection...

BACTERIAL MICROSURGEONS

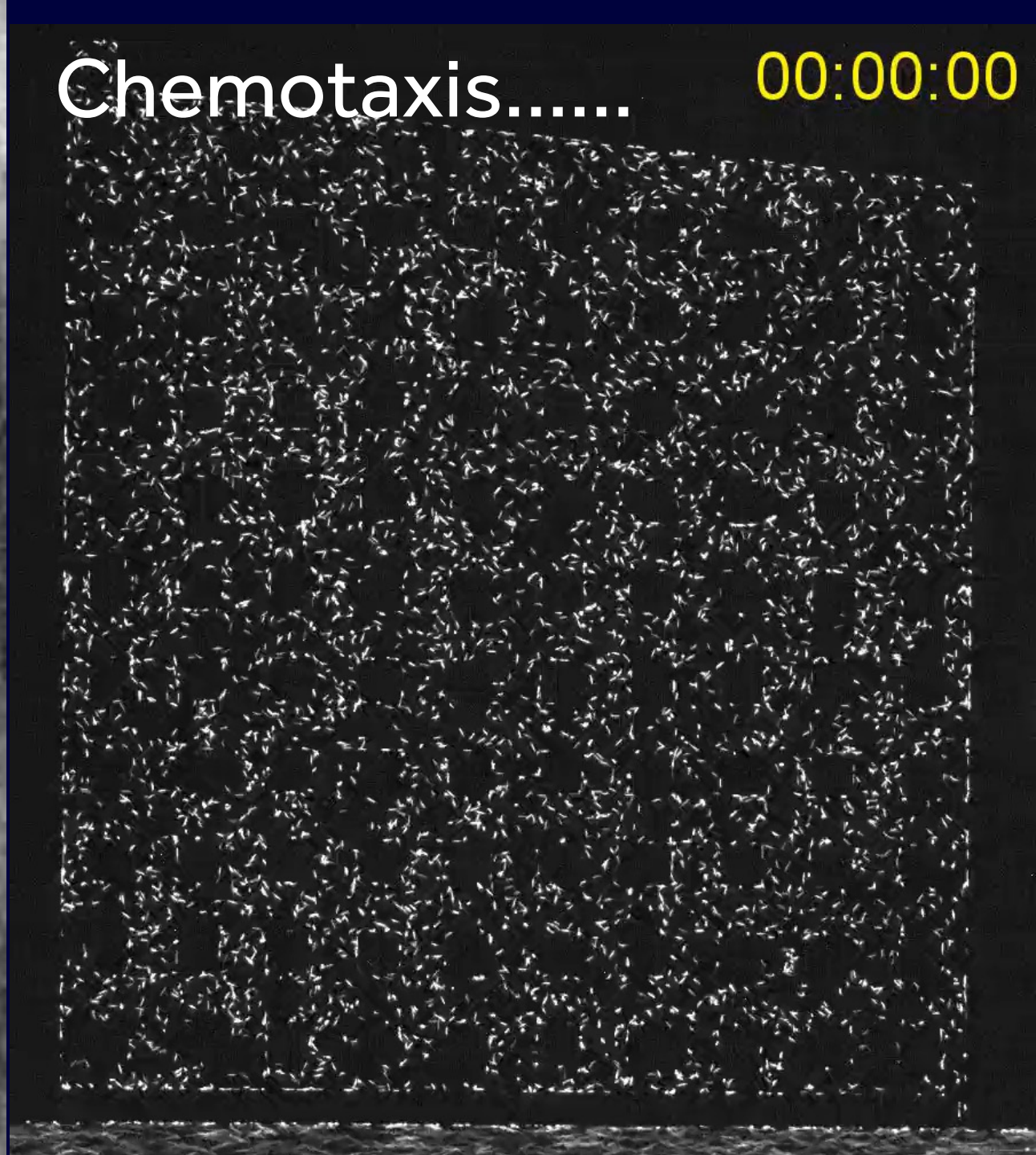


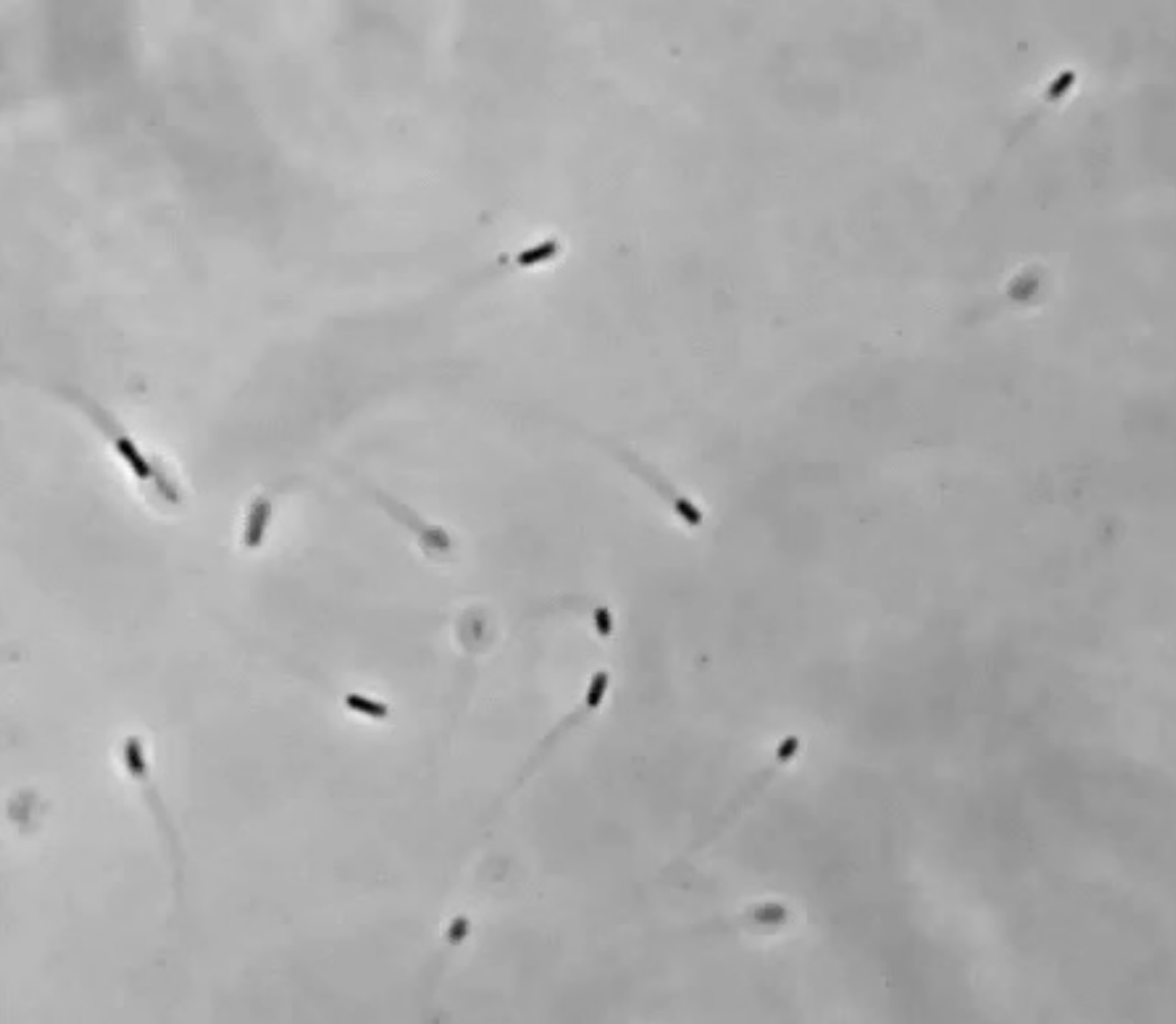
Motility.....



Chemotaxis.....

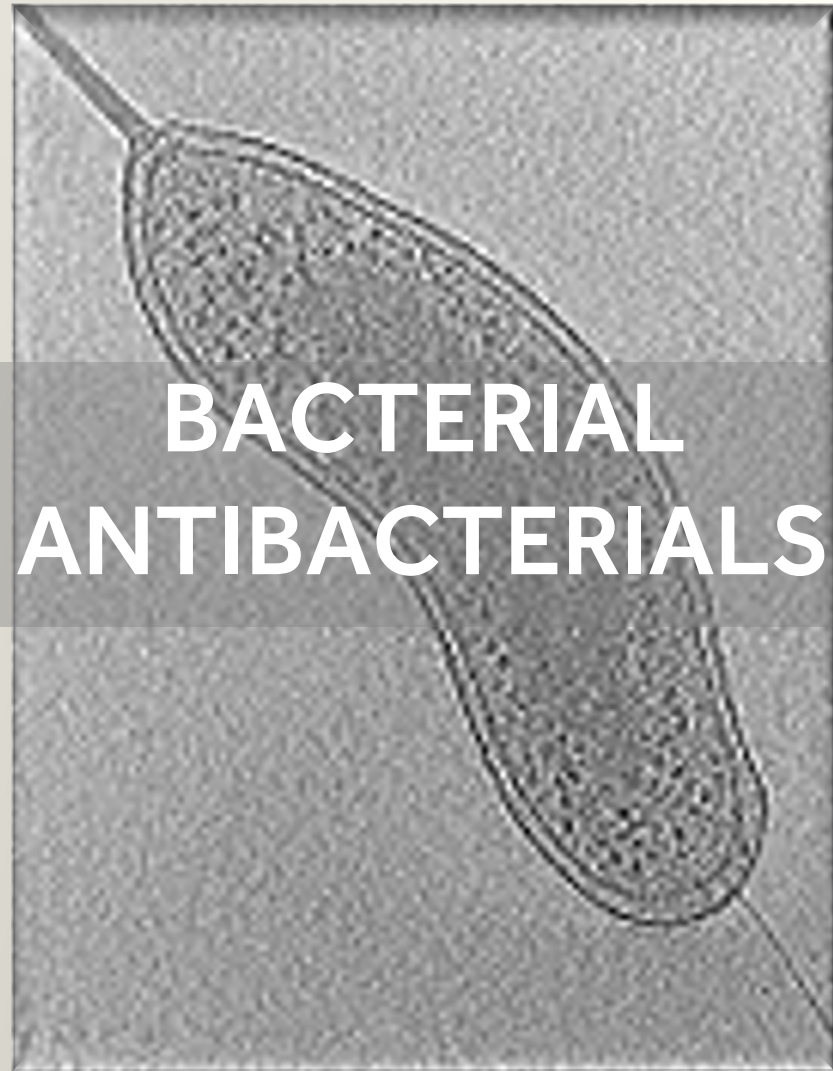
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*Microbially
Targeted
Medicine*





**BACTERIAL
ANTIBACTERIALS**



**PERSONALISED
MICROBIAL
TUMOUR
TARGETING**

Quarks



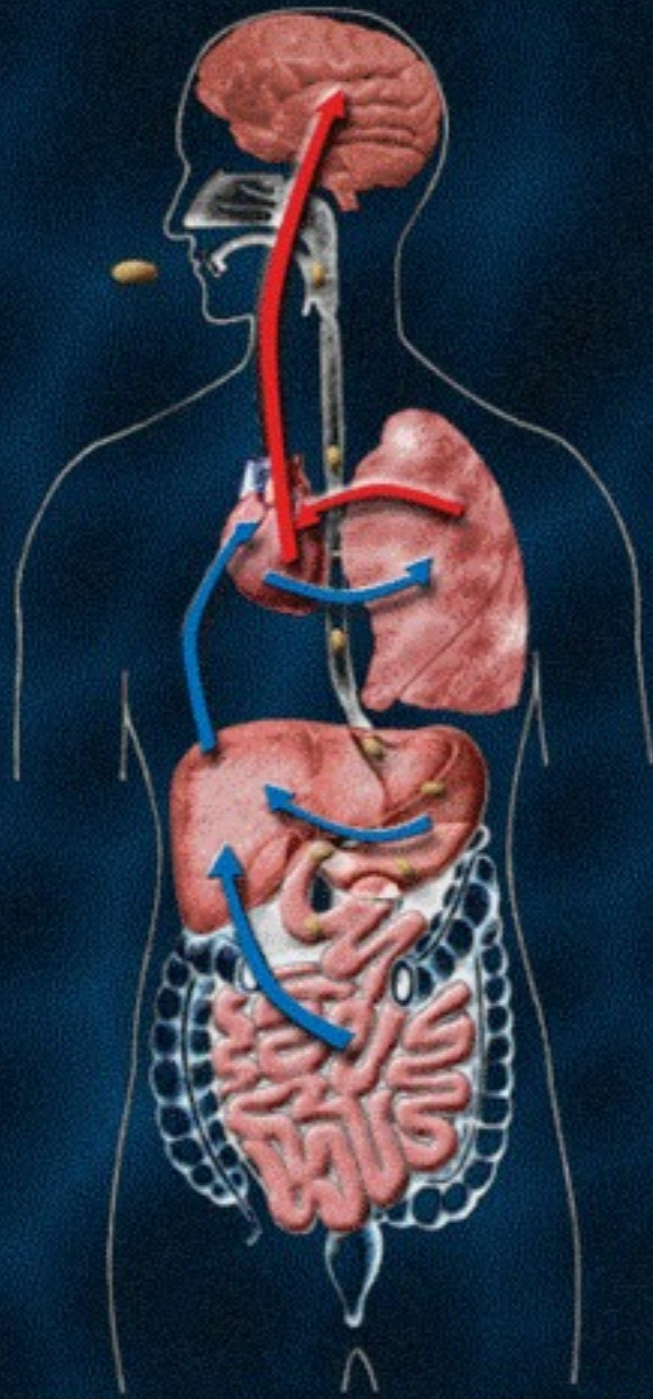
MICROBIAL FOODS





What else might microbes be able to do?





Common sugar: sucrose
Glucose- β 1,2-Fructose



Lactose
Galactose- β 1,4-Glucose



Starch
(Glucose- α 1,4-Glucose)_n

Courtesy of Lucy Crouch



Biofuel



Fruit juice industry



Baking industry



Paper industry



Fine and bulk
chemical
industries

Glycoenzymes or "CAZymes" (Carbohydrate Active enZymes)



Animal feed industry



Textile industries

Diagnostics



Drug development



Home care products



Gourmet Gorse

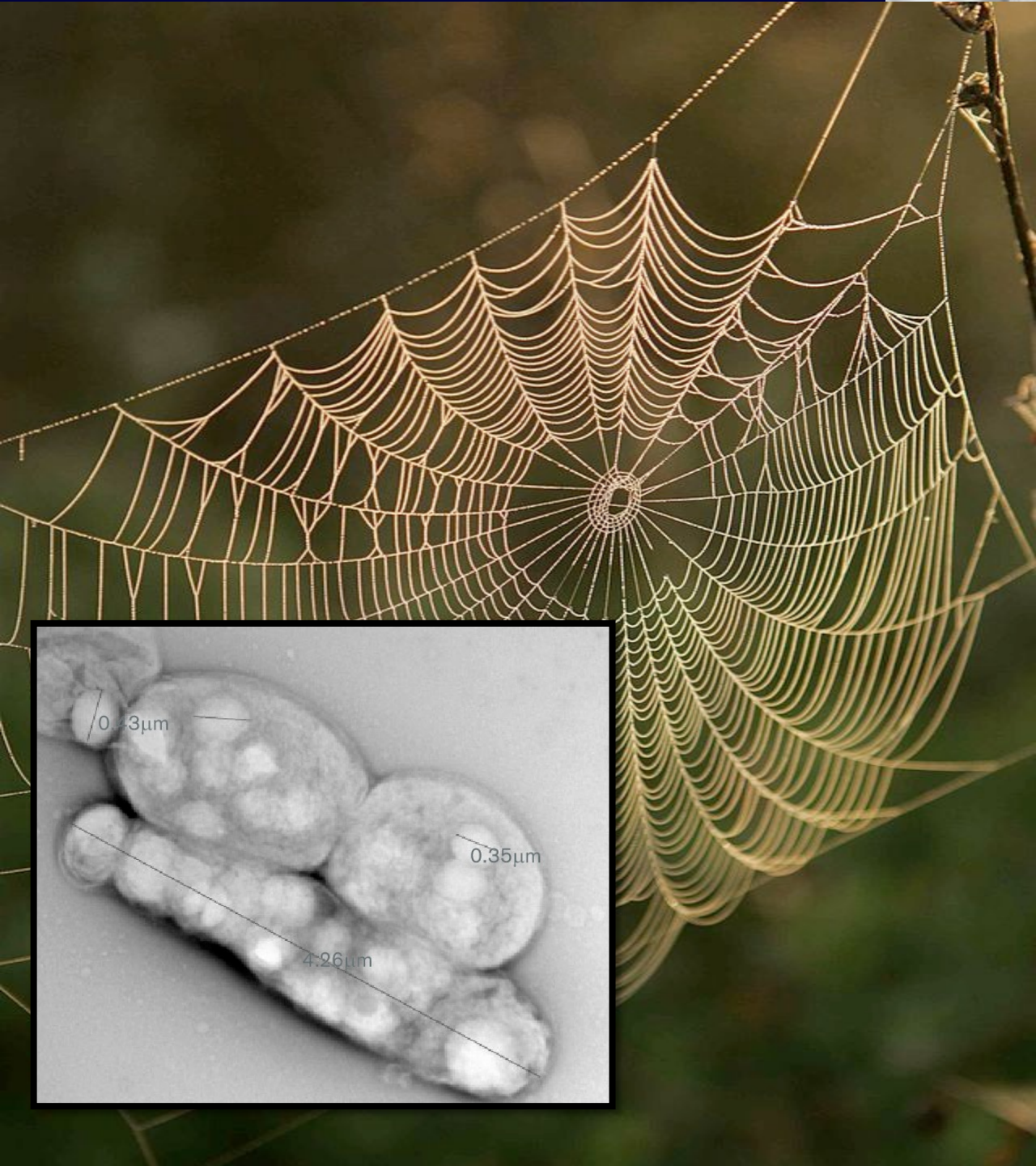
Courtesy of Wendy Russell

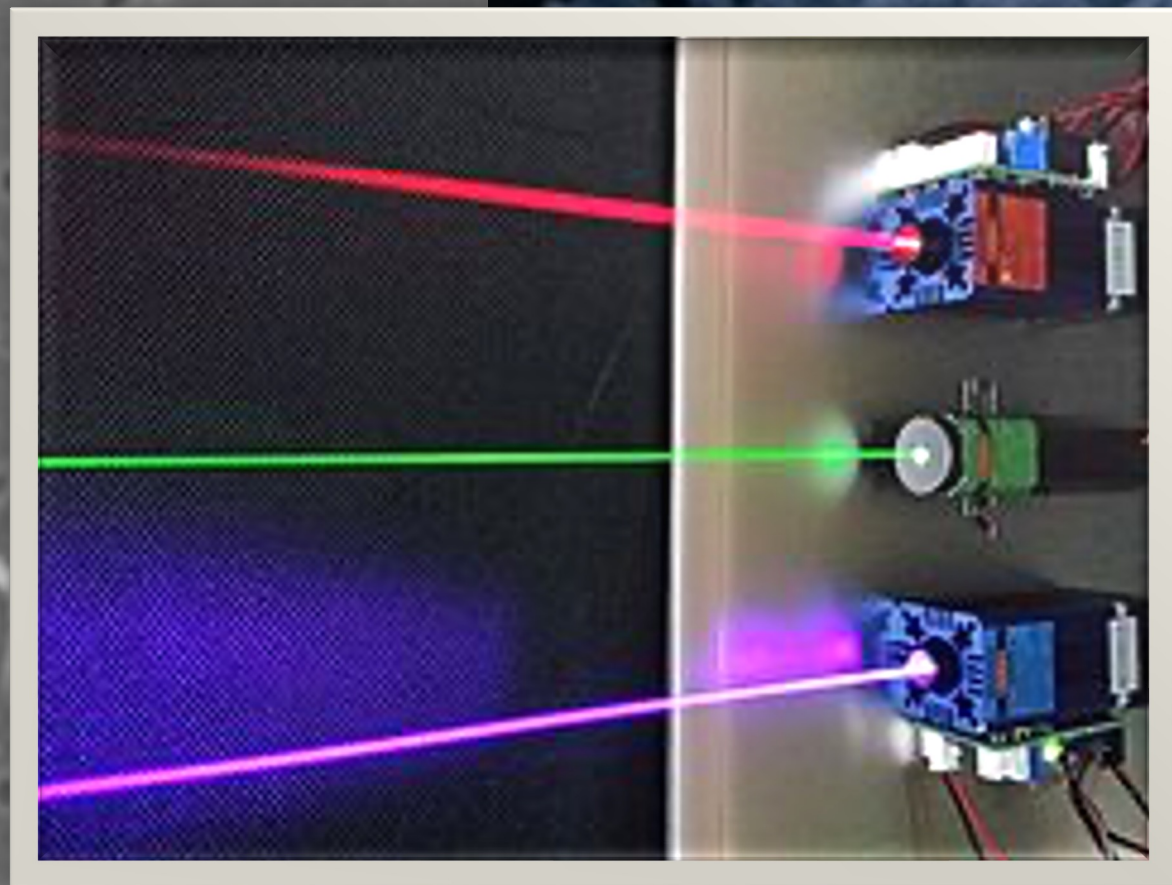
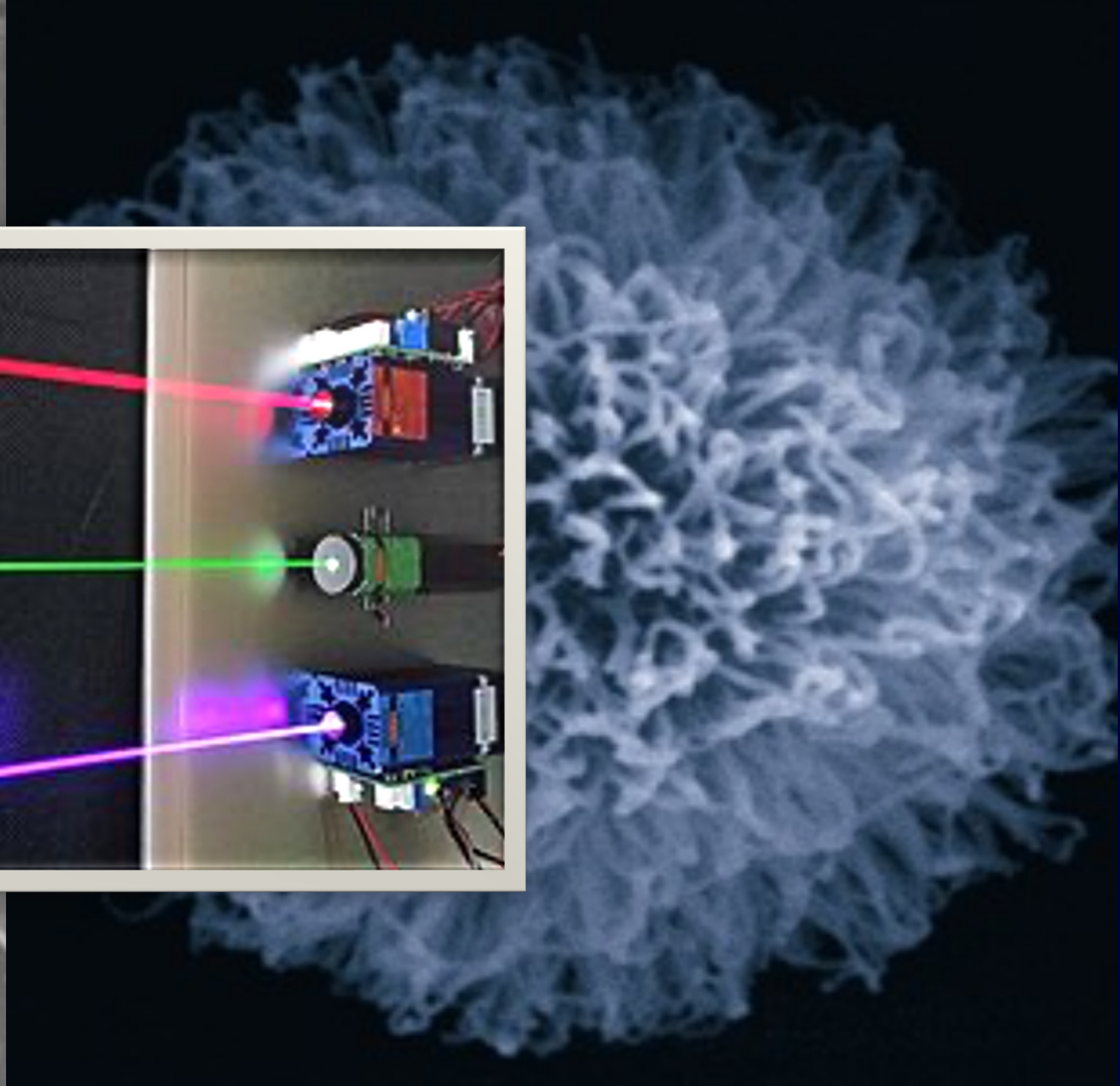
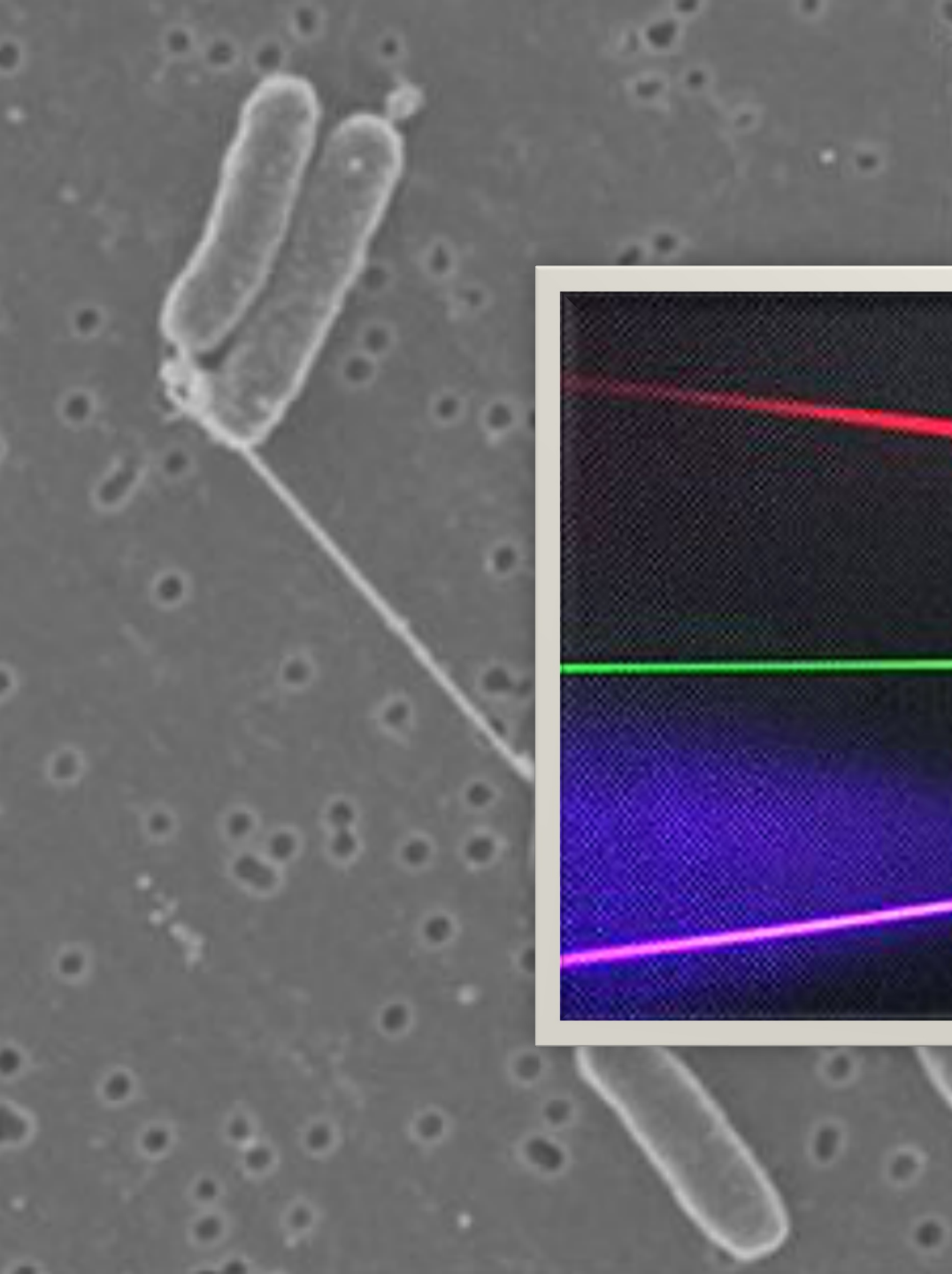




MICROBIAL MANUFACTURING



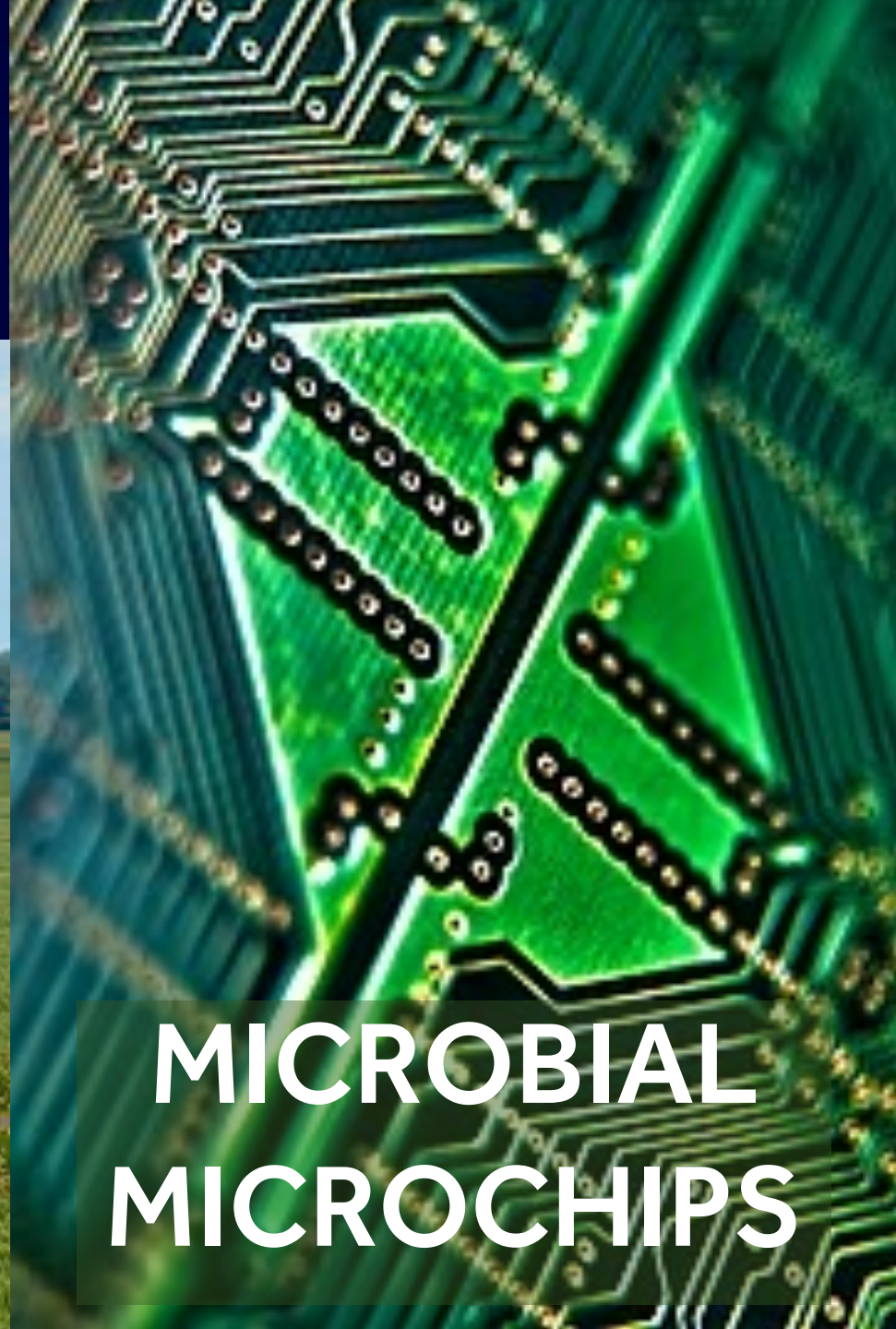




SELF-PROPAGATING SENSORS



**MICROBIAL
MICROCHIPS**



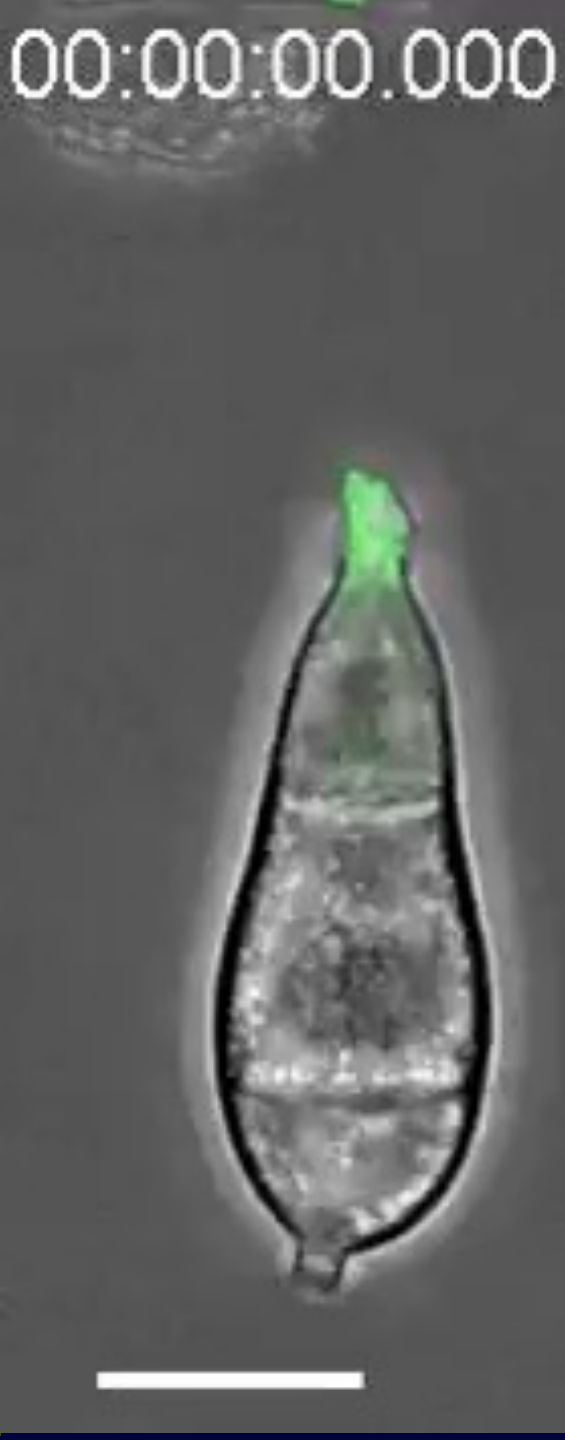
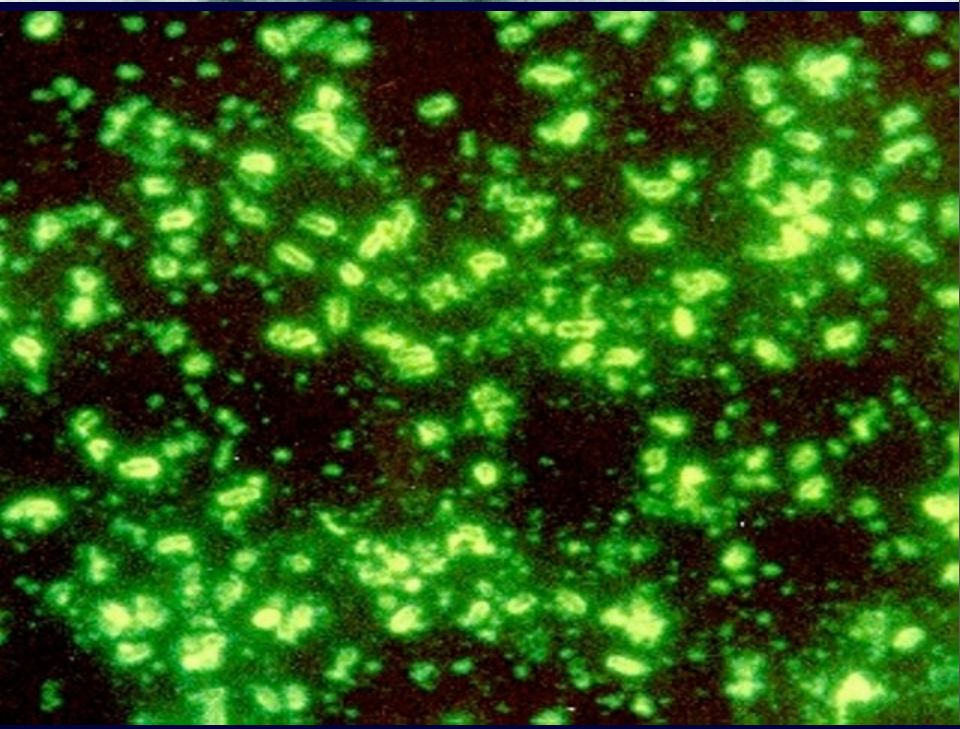
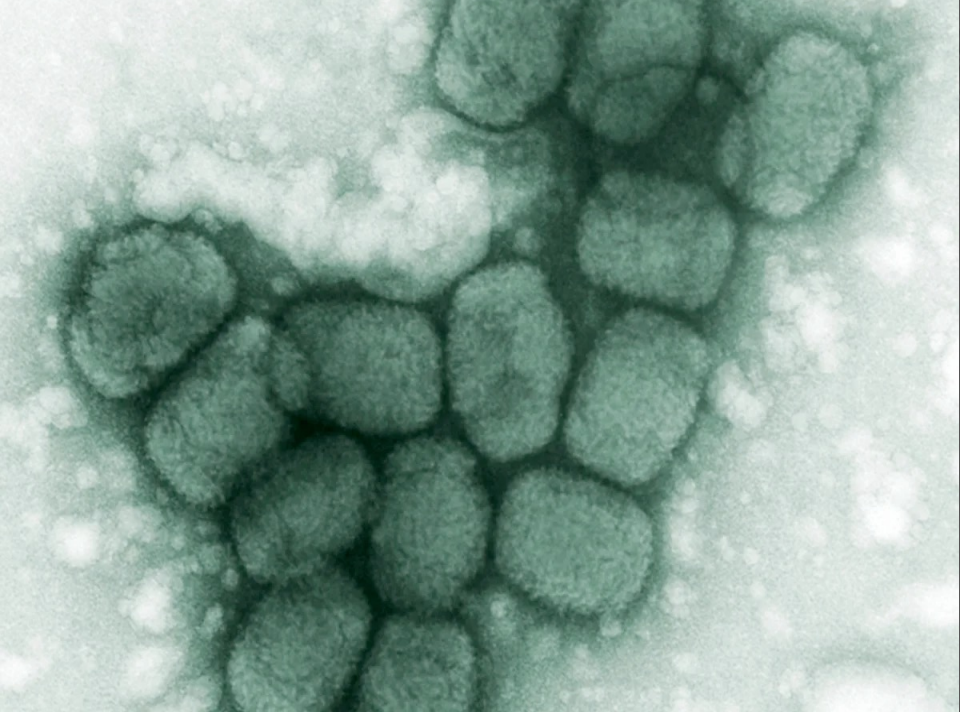
It's the end of the world as we know it...

(and I feel fine)



A world map with a dark background, overlaid with numerous red circles of varying diameters. The circles are most densely packed in North America, Europe, and East Asia, with the largest circles appearing in these regions. Smaller circles are scattered across Africa, South America, and the Middle East. The map includes labels for major countries and cities in white text. A white rectangular box with a thin black border is centered over the Atlantic Ocean, containing the word 'PANDEMIC' in white, bold, sans-serif capital letters.

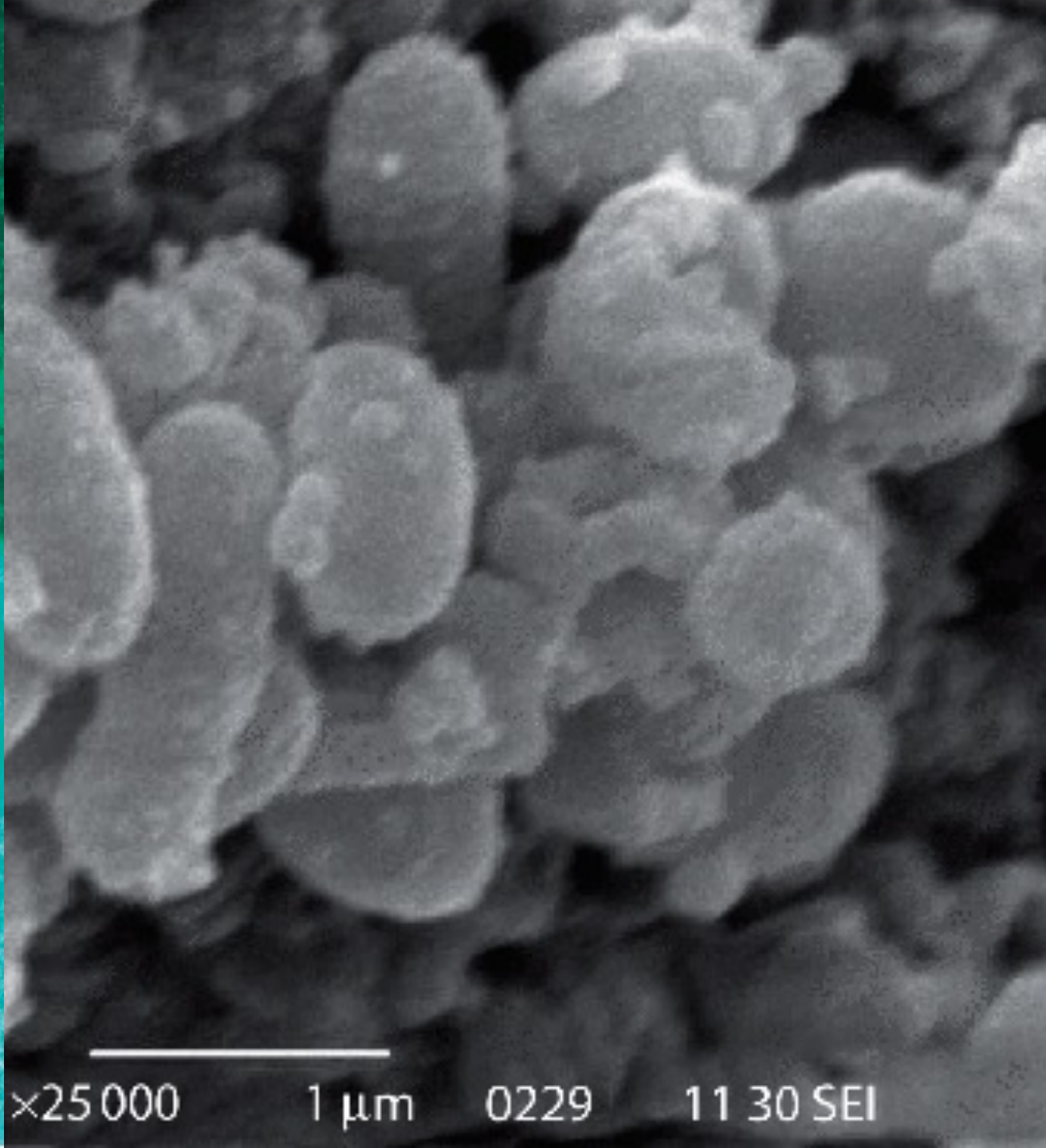
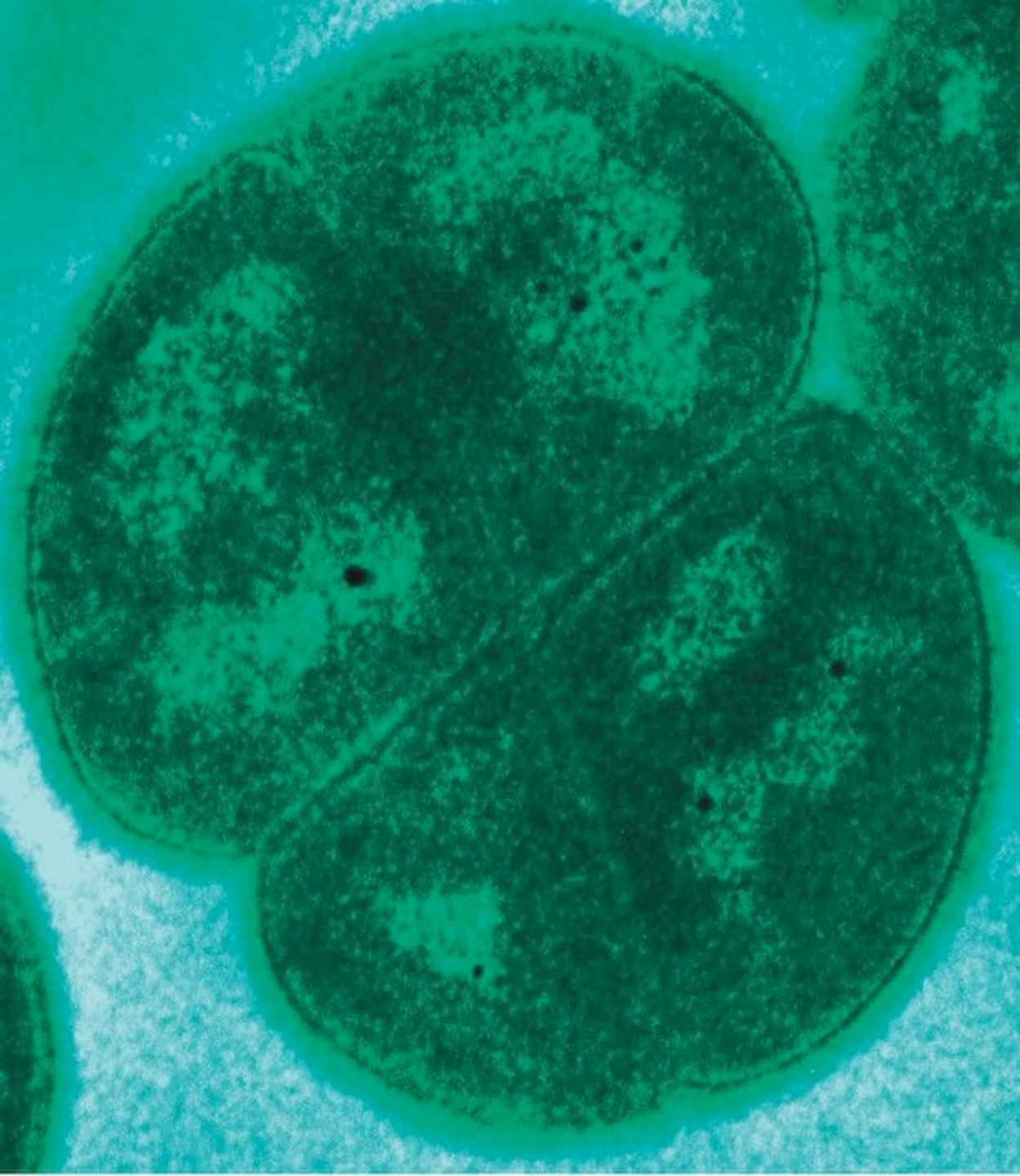
PANDEMIC



Courtesy of Nick Talbot

To end on a happier note (sort of)...





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11 30 SEI



*“C'est les microbes qui
auront le dernier mot.”*



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