Empa

Materials Science and Technology

Nanomaterials meet Light: A Power Couple to Fight Antimicrobial Resistance

Dr. Giacomo Reina

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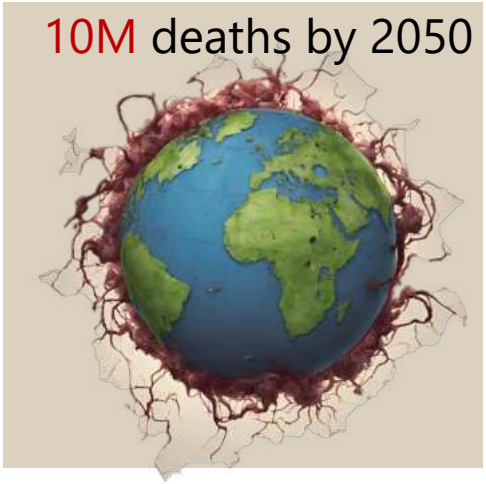
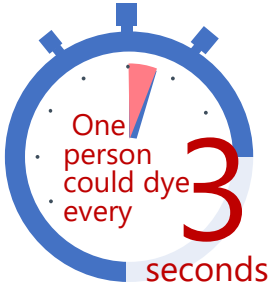
AntiMicrobial Resistance (AMR)





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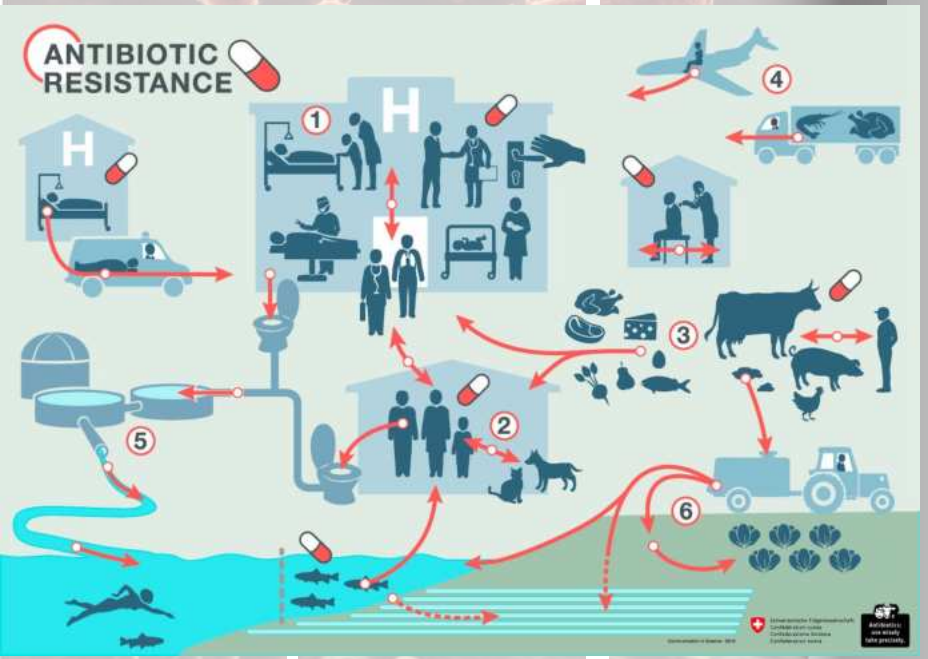
AntiMicrobial Resistance (AMR)



1) In health institutions

2) After antibiotic treatment

3) Foodborne infections.

4) Tourism and food imports

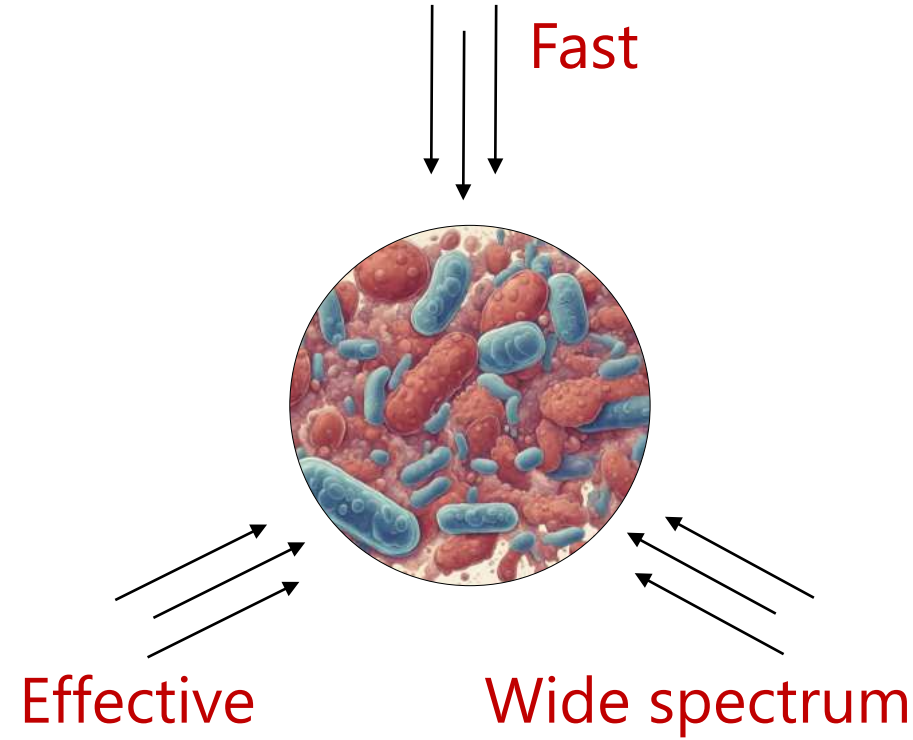
5) Rivers, groundwater reserves.

6) Spreading of slurry

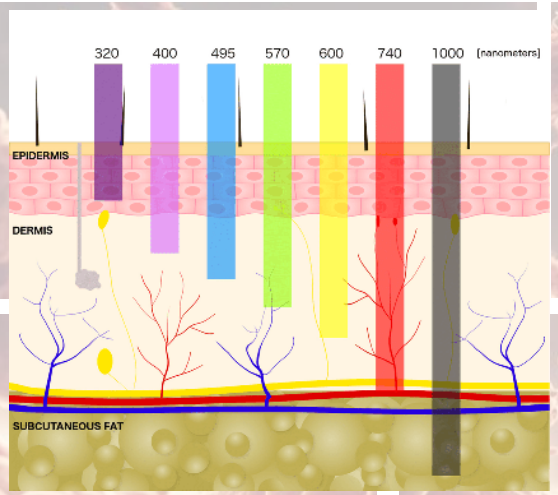
https://www.star.admin.ch/star/en/home/sarr/sarr.html

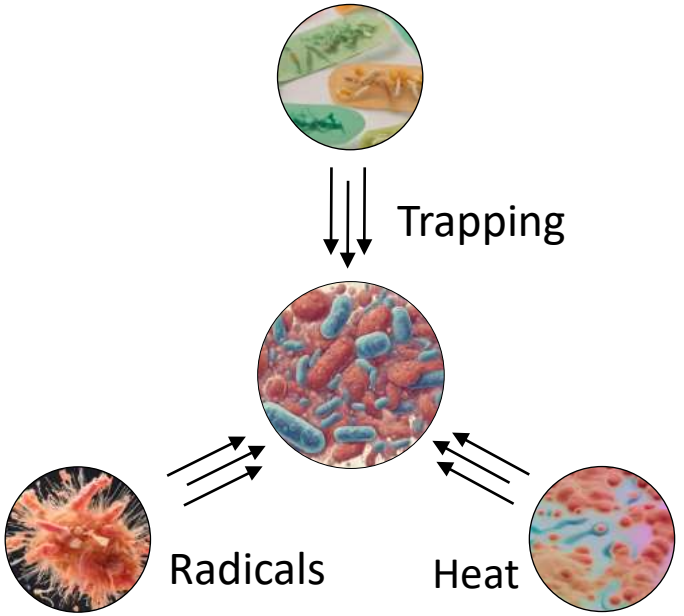
Multifunctional Strategy

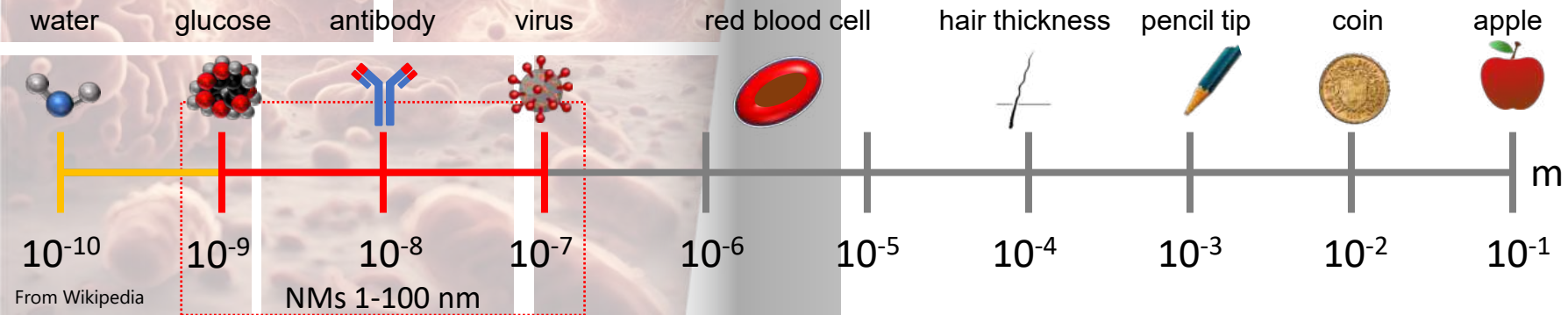
Each bacteria divides every 20 min



The Nano-World



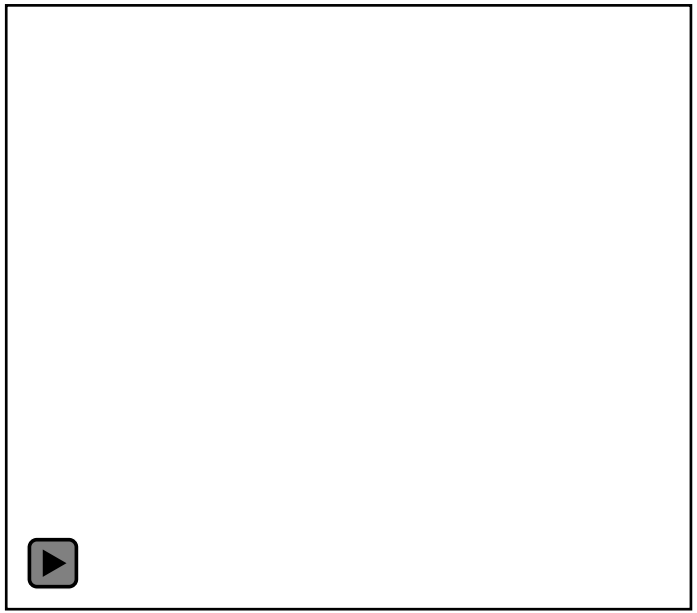


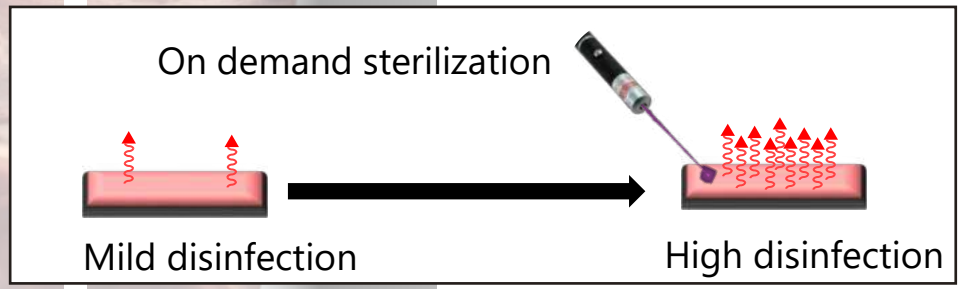


From Wikipedia

Photo-strategies

-dynamic





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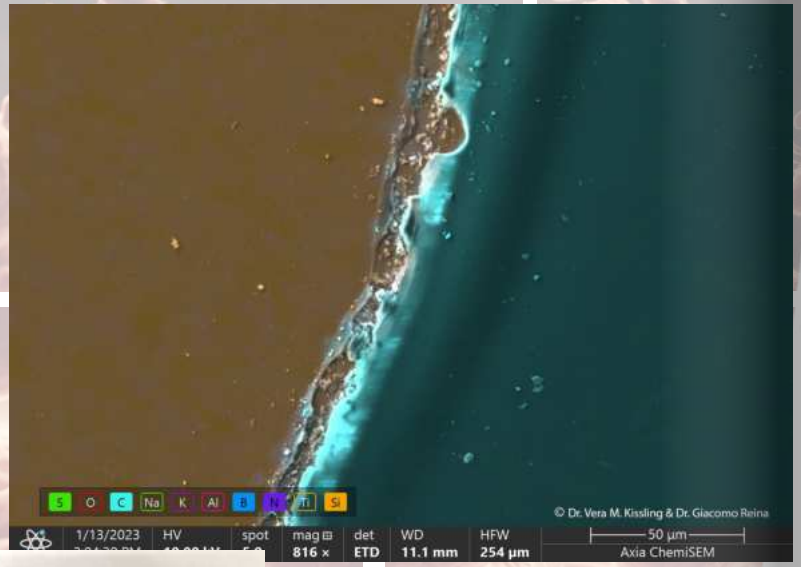
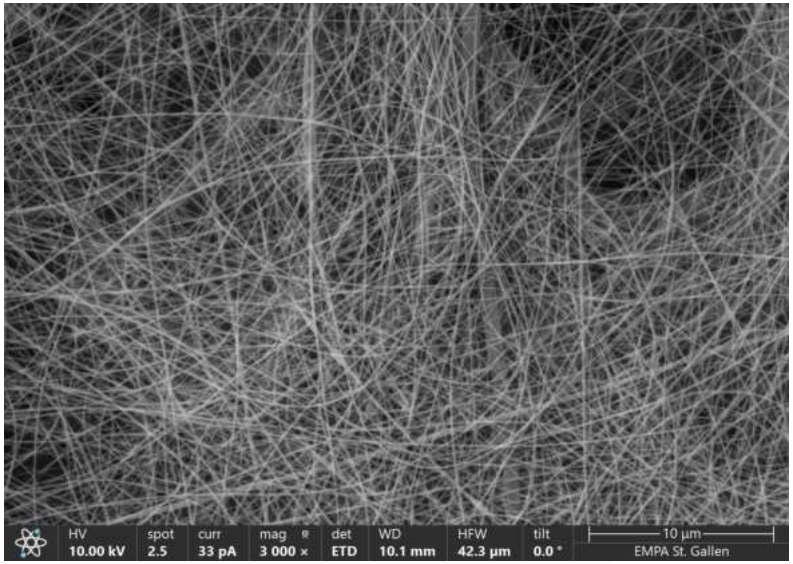
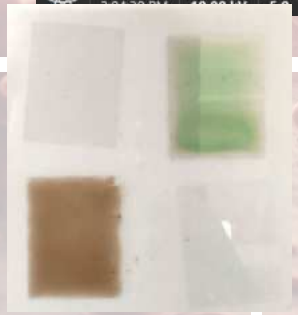
https://www.youtube.com/watch?v=OoKDC1AMMwg

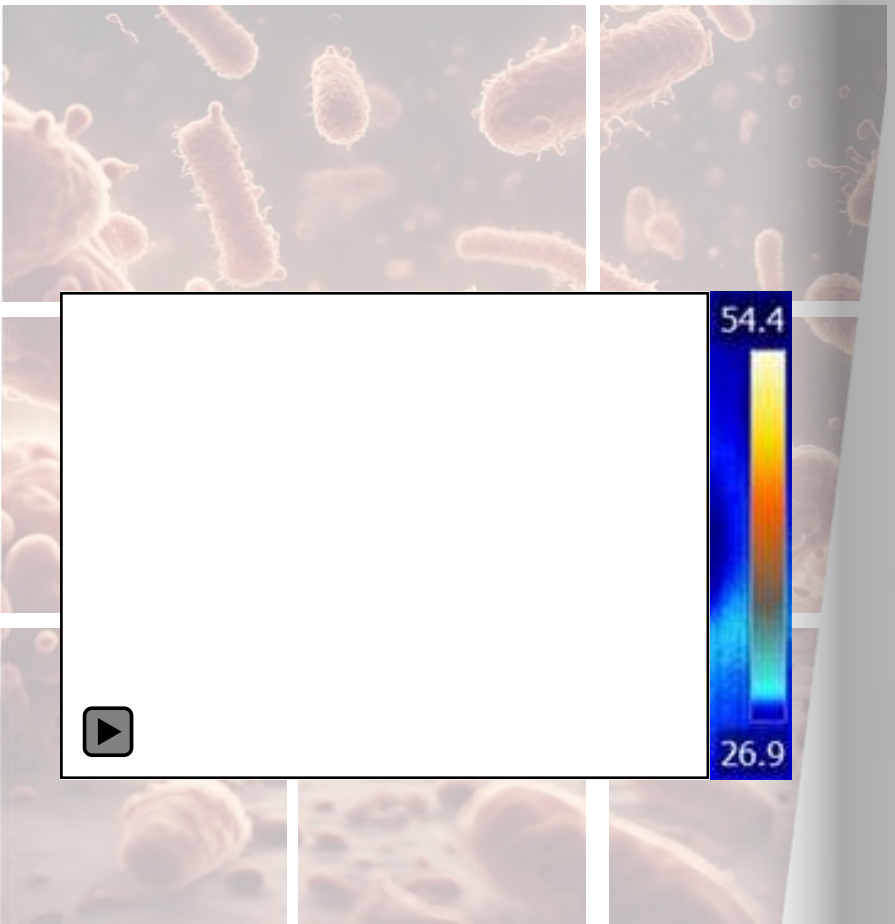
Building up next generation antimicrobial coatings

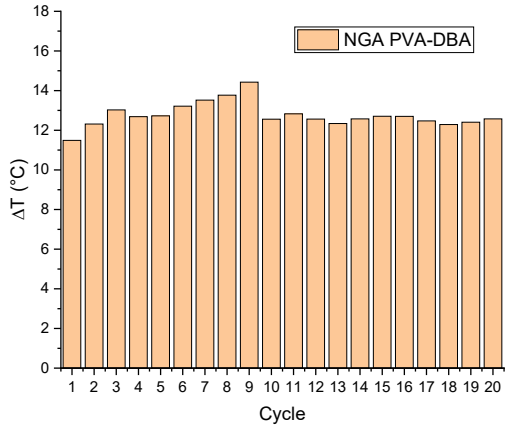


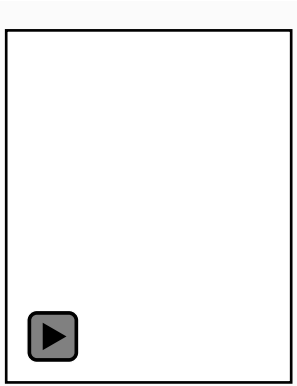


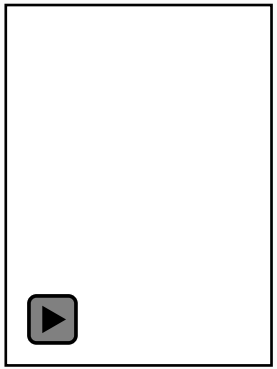


Building up next generation antimicrobial coatings



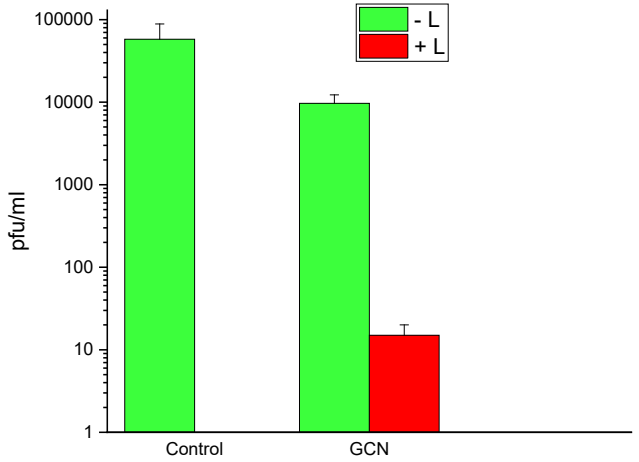


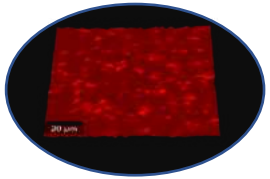




Building up next generation antimicrobial coatings

Activity vs Coronavirus





Take home message

- At Empa we are developing next-generation biocompatible antimicrobial coatings.
- Nanomaterials are powerful multifunctional agents against bacteria.

- NIR light can be used for on-demand surface disinfection.

Tackling the Silent Pandemic: Novel Materials to Fight Antimicrobial Resistance

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