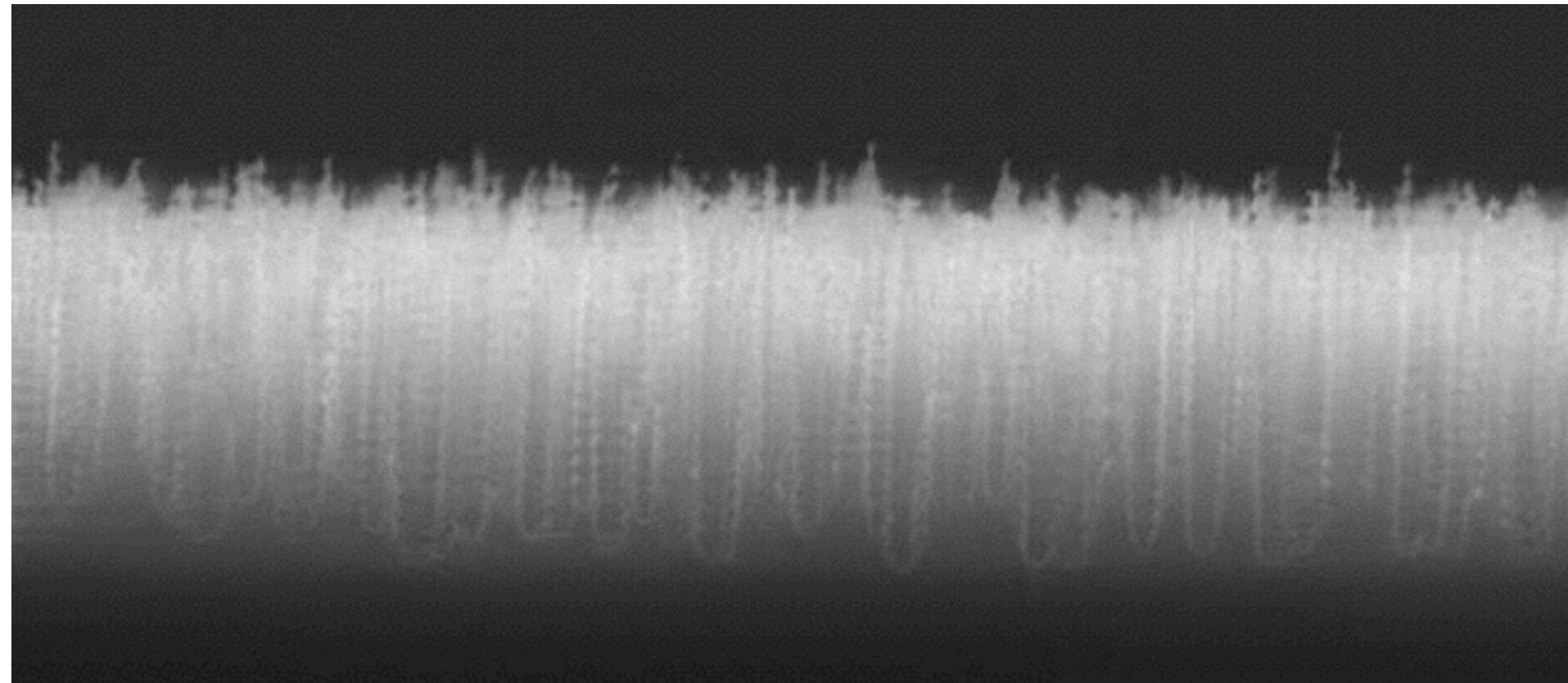


WHAT MICROBIOSHIELD DOES:

For years, science has combated bio-hazards with “Chemical Kills” – utilizing toxic chemicals to kill a dangerous biological threat (bacteria, viruses, etc.). Study and advancements in the field of Nanotechnology, has led to the creation of a “**Mechanical Kill**” **mechanism**, whereby coating an object will kill the cells of the bio threat trying to attach to the object. The MBS coating is approximately 4 Nano meters in size, as opposed to most microbial matter, which is 90-100 Nano meters in size, making it impervious to the bio-hazard. The material has been developed in such a way, that it creates a “**Micro Crystalline Structure**”.



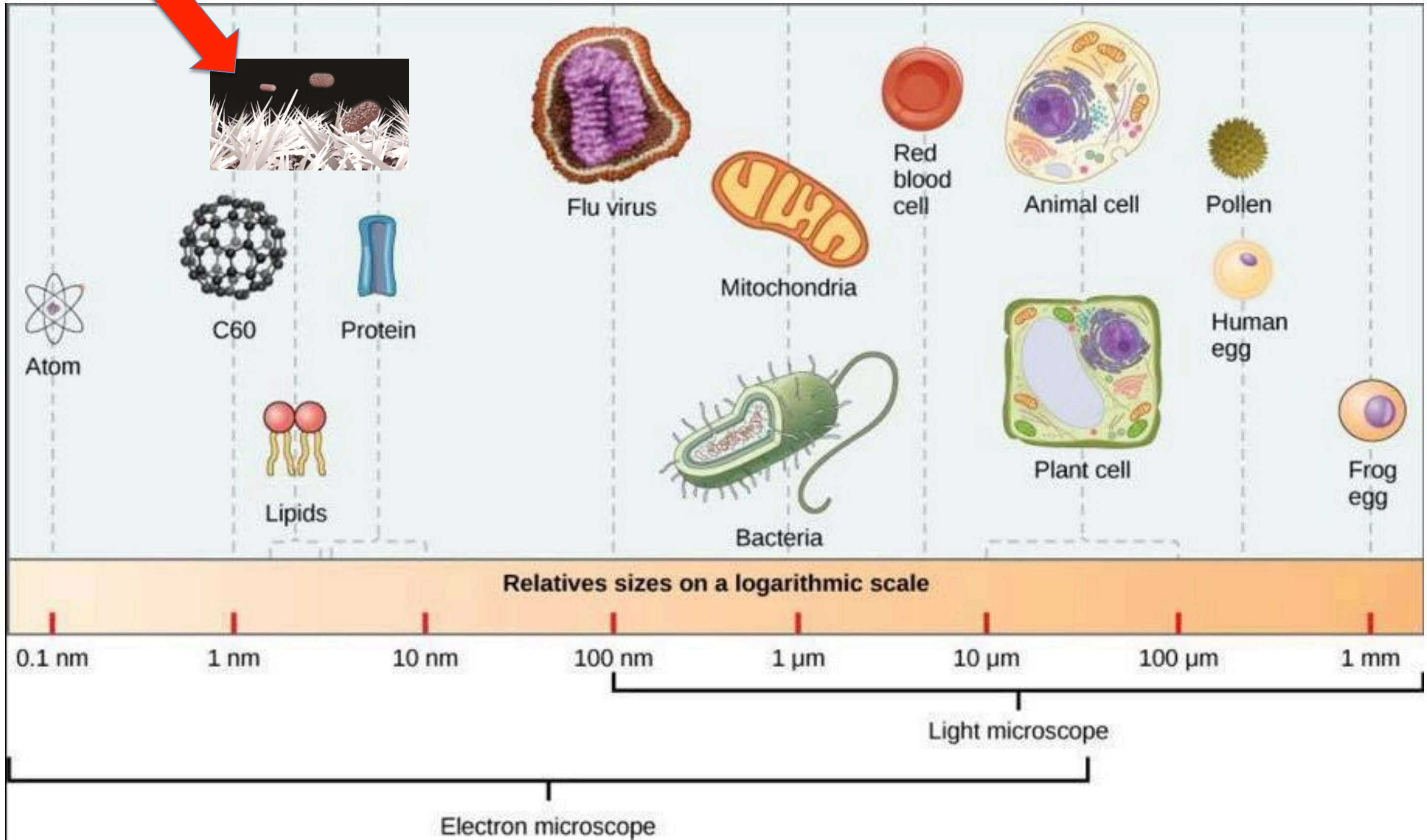
WHAT IS MICROBIOSHIELD:

Microbioshield is fast acting nano particulate silica that prevents bacteria and virus particles from attaching to surfaces. It is a chemically inert solution composed of **silica dioxide (SiO₂) crystals held in suspension**.

TECHNICAL INFORMATION

MBS COATING

MICROBE RELATIVE SIZE VS MICROBIOSHIELD:



MAJOR MEDICAL UNIVERSITY CLINICAL STUDY

COATING STABILITY:

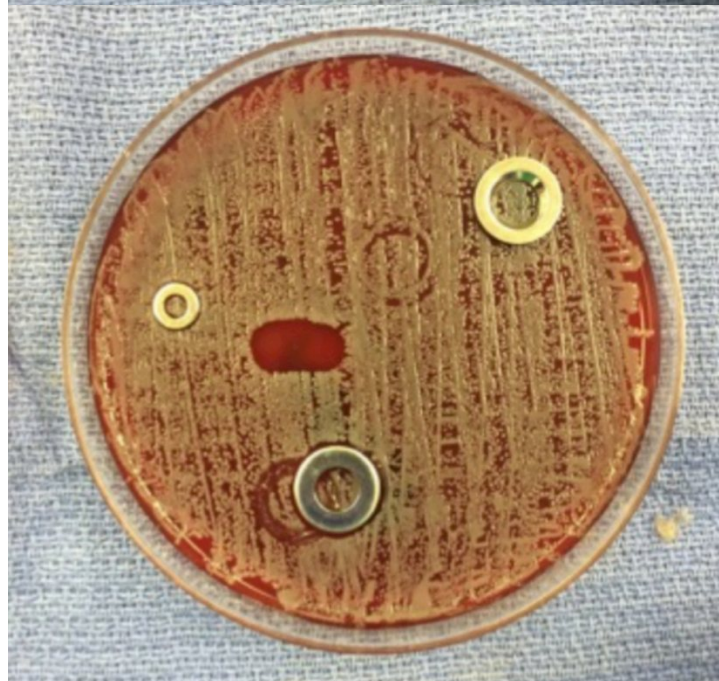
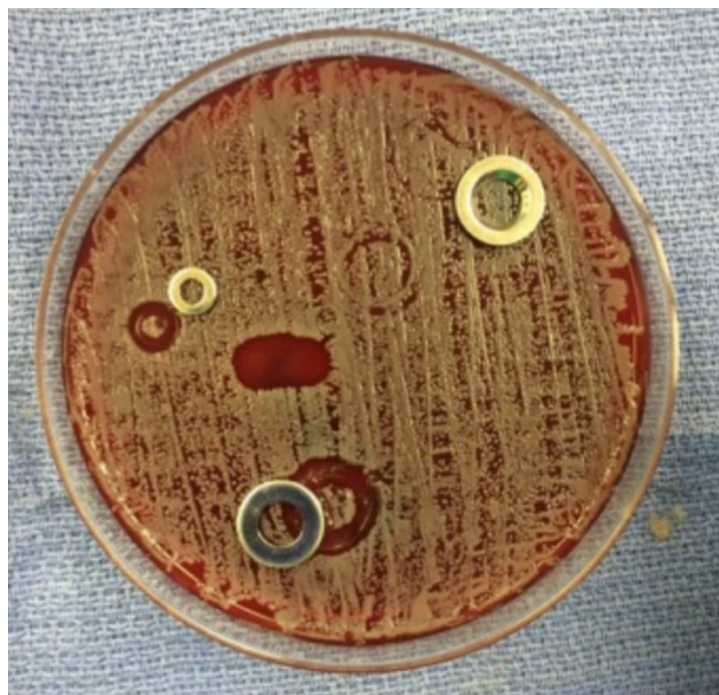
NSC suspension was applied to petri dish with calibrated loupe and inoculated with MRSA

Same standardized MRSA inoculum used for across all experiments



COATING STABILITY:

Coated and control stainless steel washers used No zone of inhibition = no leaching of NSCs. Protected to edge inoculated washer.



COATING EFFICACY:

Control and coated implants were inoculated with a standardized 0.5 McFarland (150 million cells/ml) MRSA culture and put in growth medium

Coated screw which cleared effected broth



TECHNICAL INFORMATION

TEST RESULTS USING MICROBIOSHIELD PROTECTANT SURFACE CLEANER:

These experiments and this discussion is part of a research experiment performed by an FDA/CDC approved Laboratory.

Table 1: AMP Surface Cleaner Results Table							
Hours	Bacteria	MBS added?	Incubation Time of Bacteria on Slide	Growth observed	OD	CFU/mL**	1:10 CFU/mL**
24 hours	None	No	30	No	.010	0	
	Staphylococcus Aureus	No	30	Yes	.656	>100,000	
		Yes	10	No	.019	0	0
	Escherichia Coli	Yes	30	No	.022	0	0
		No	30	Yes	.455	>100,000	
	Klebsiella Pneumonia	Yes	10	No	.016	0	0
		No	30	Yes	.552	>100,000	
		Yes	10	No	.231	0	0
			Yes	30	No	.015	0

**Sub-cultures were cultured at 100% and 1:10 dilution. Read 24 hours after inoculation of sub-culture

FIGURE 10:
Blood Agar Plate inoculated from MBS Slide with Staphylococcus Aureus



FIGURE 12:
Blood Agar Plate inoculated from untreated slide with Staphylococcus Aureus



TECHNICAL INFORMATION

TEST RESULTS USING MICROBIOSHIELD PROTECTANT SURFACE CLEANER:

Table 2: Hand Sanitizer Results Table						
Hours	Bacteria	MBS	Incubation Time of Bacteria on Slide	Growth observed	OD	CFU/mL**
24 hours	None	No	30	No	.010	0
	Staphylococcus Aureus	No	30	Yes	.656	>100,000
		Yes	30	No	.012	0
	Escherichia Coli	No	30	Yes	.455	>100,000
		Yes	30	No	.016	0
	Klebsiella Pneumonia	No	30	Yes	.552	>100,000
Yes		30	No	.020	0	

*Quantification of Staphylococcus Aureus CFU is subjective due to abnormal growth pattern. The colonies looked extremely small probable indication of cell wall injury.

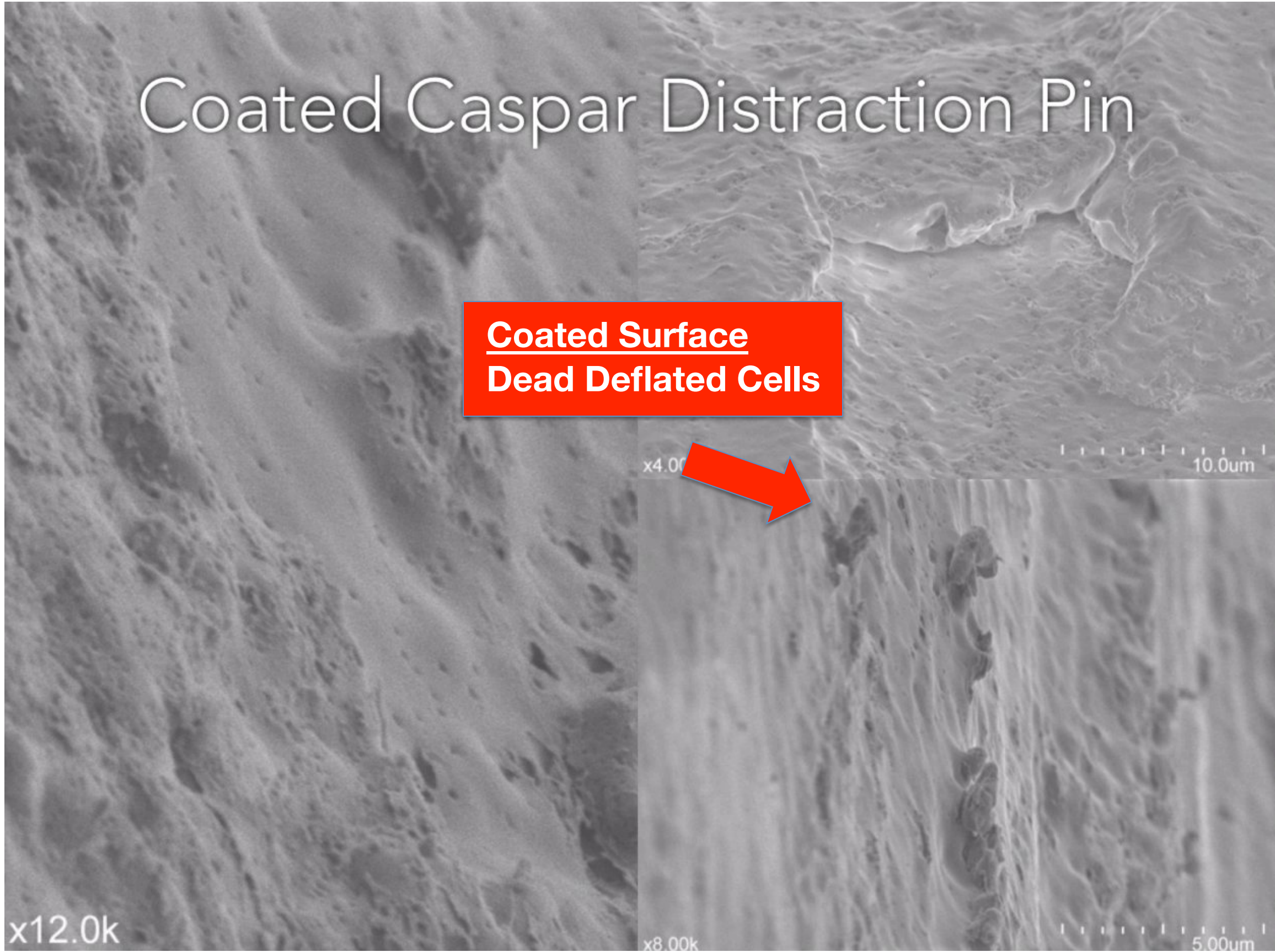
** Sub-cultures were cultured at 100% and 1:10 dilution. Read 24 hours after inoculation of sub-culture.



TECHNICAL INFORMATION

Coated Caspar Distraction Pin

**Coated Surface
Dead Deflated Cells**



TECHNICAL INFORMATION

Control Caspar Distraction Pin

**Untreated Surface
Healthy Cells**

