

# A Piercing Issue: Assessing the ability to decontaminate body piercings

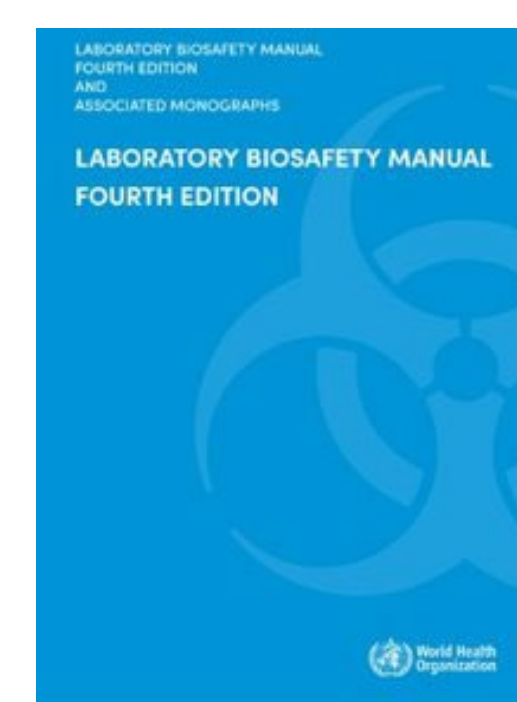
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## Introduction

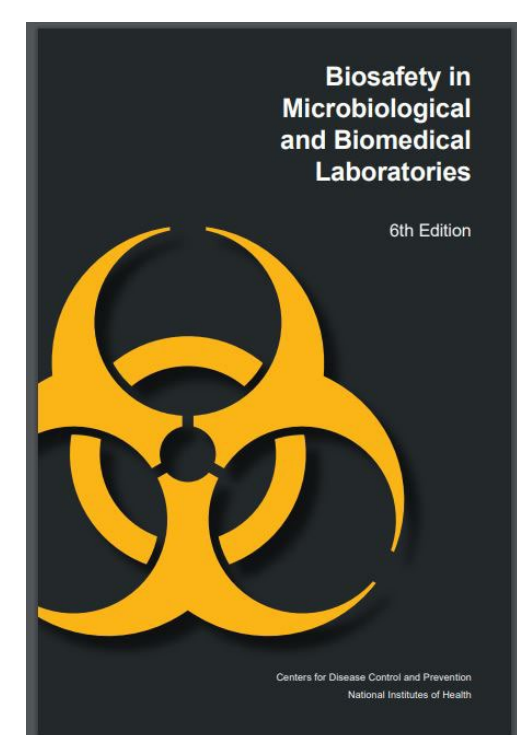
There is a lack of evidence-based guidance regarding wearing facial and body piercings in laboratories. To address this gap, we developed a surrogate skin model to demonstrate the ability to remove a microorganism simulant from body piercings using various wash treatments.

- Evidence associating jewelry with infections is only reported in clinical settings, and conclusions typically conflate the presence of genomic material with infectious agent
- No major U.S. or international advisory or regulatory documents specifically address body piercings
- Guidance regarding jewelry and other personal affects varies between these documents



**Core Requirements:** "Cover or remove any **jewelry** that could tear gloves, easily become contaminated or become fomites."

**Heightened:** "Respirators will only provide effective protection if the wearer is free of **jewelry** in the area of the face seal."



All personal clothing and **jewelry** (except eyeglasses) are removed in the outer clothing change room."

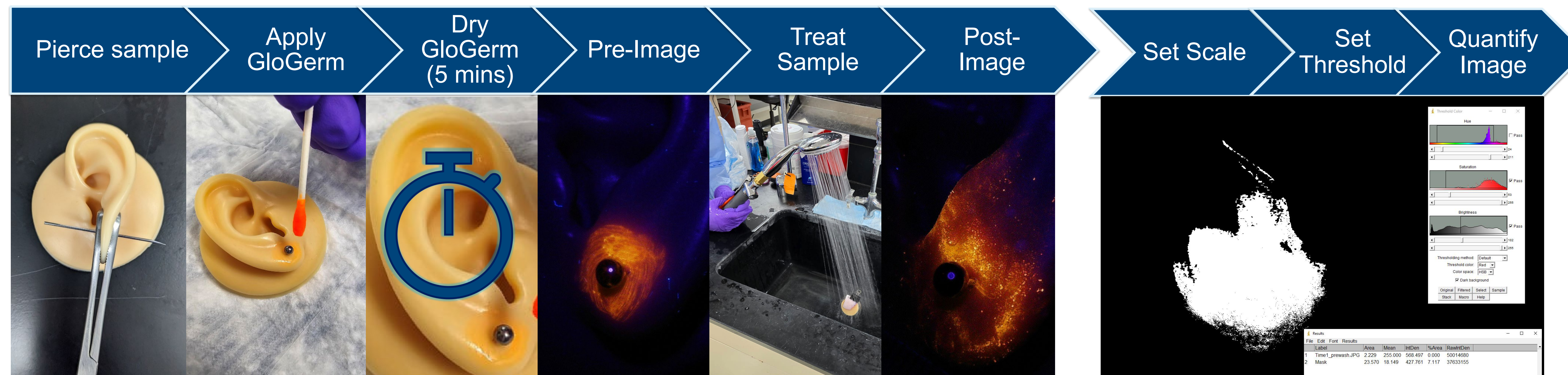
BMBL Page 56, 104; applies explicitly to biosafety level-4 laboratories

## Limitations

We did not set out to recreate a perfectly repeatable personal shower as this is unrealistic!

Variables such as water temperature, flow rate, water pressure, and scrubbing behaviors could cause variations in the real world.

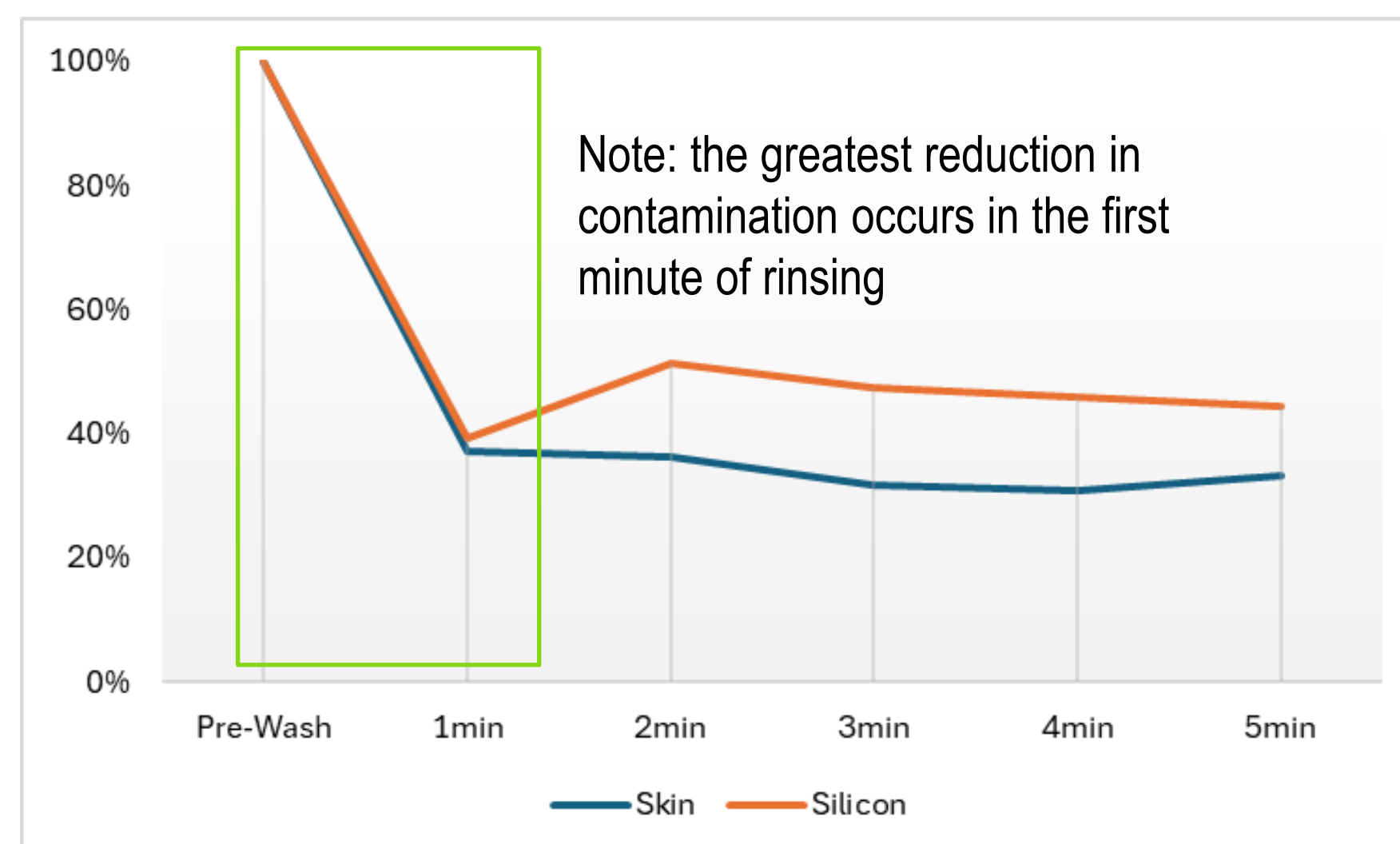
## Initial Experimental Design and Methods



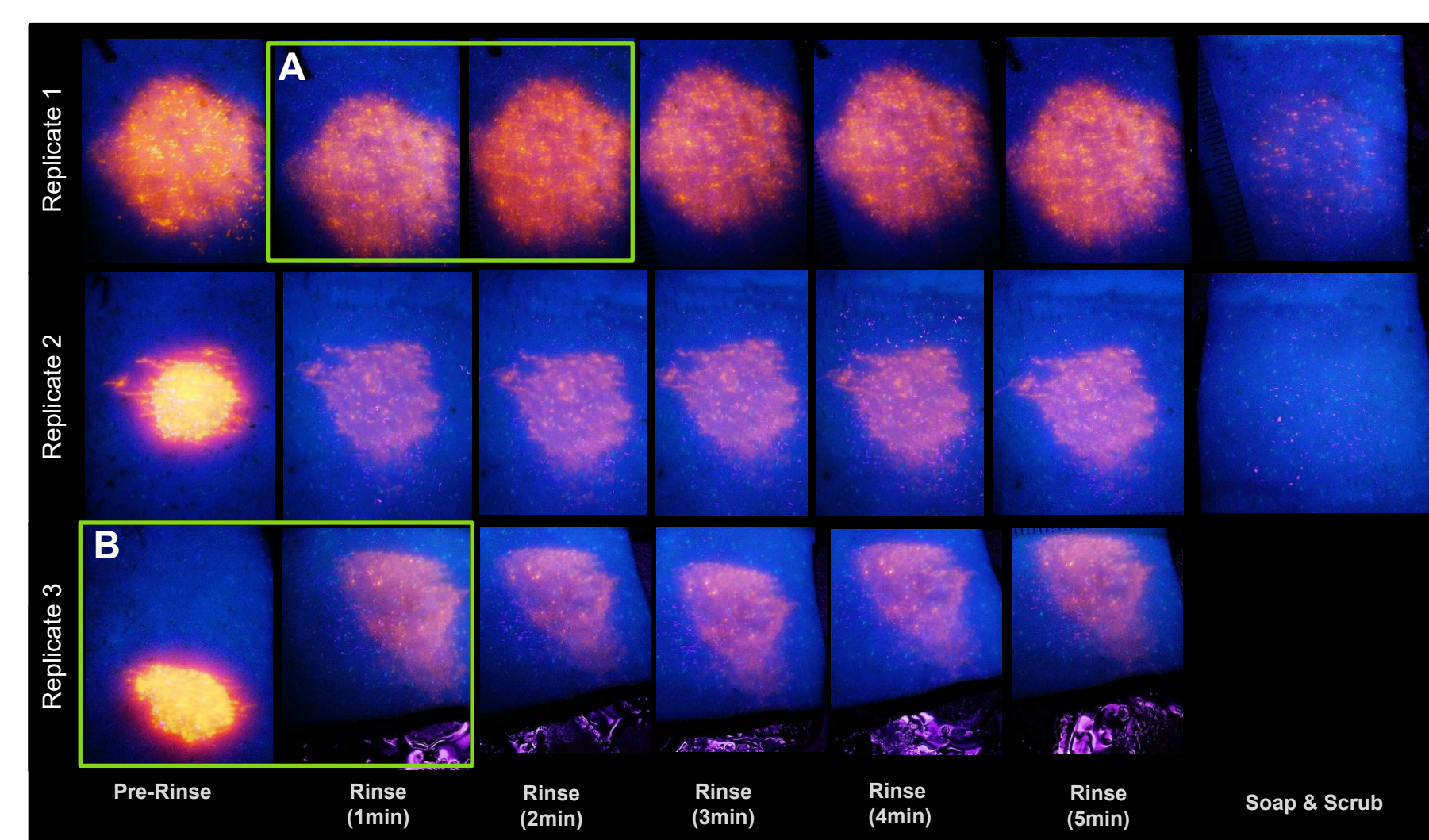
**Figure 1. Glo Germ contamination of silicone ear with piercing and wash treatment workflow:** Skin surrogates were pierced, fitted with jewelry, inoculated with Glo Germ via cotton swab, allowed to air-dry for 5 minutes, imaged (pre-wash), treated, and imaged again (post-wash).

**Figure 2. Quantifying area of contamination using Image J.**

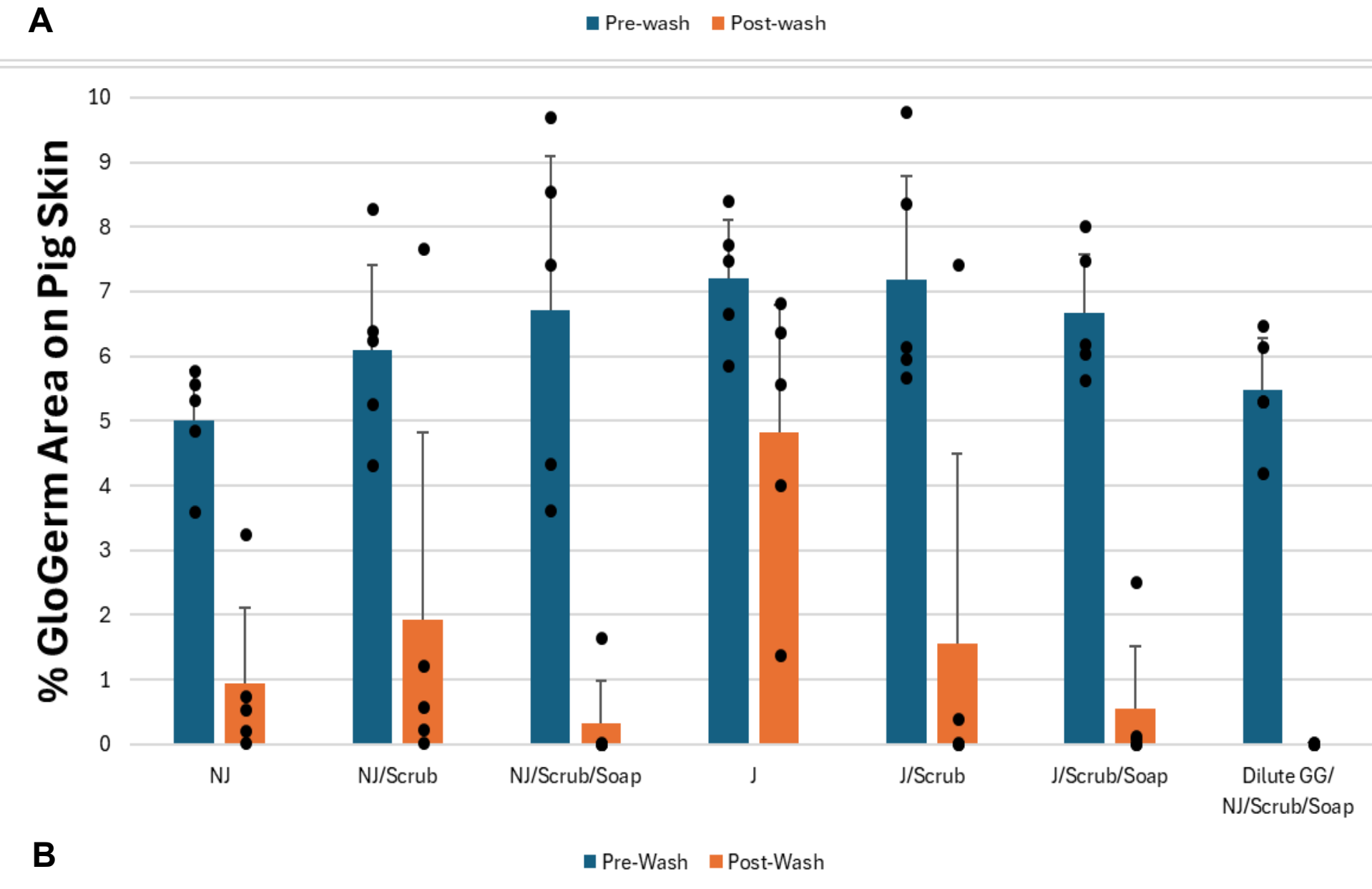
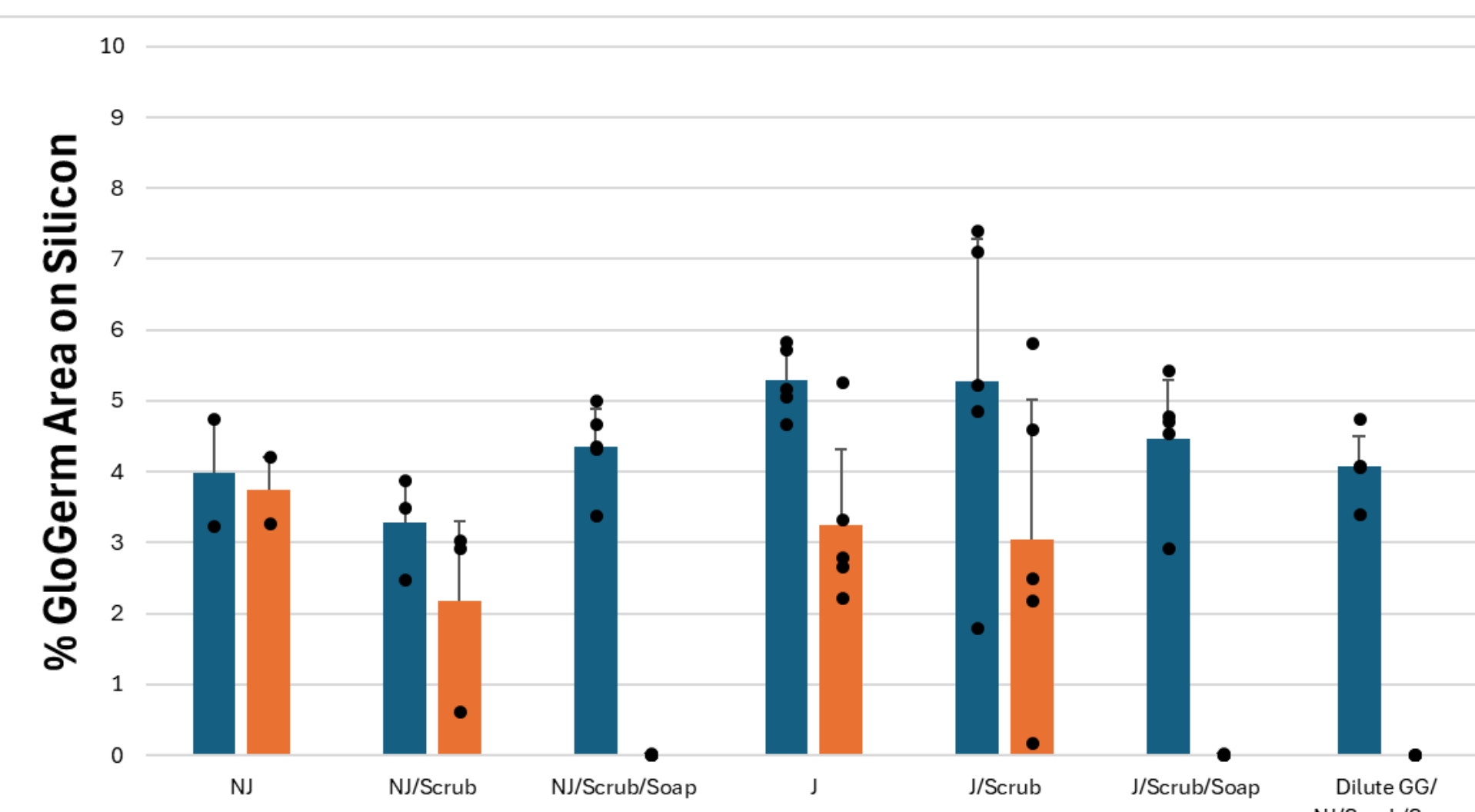
## Results



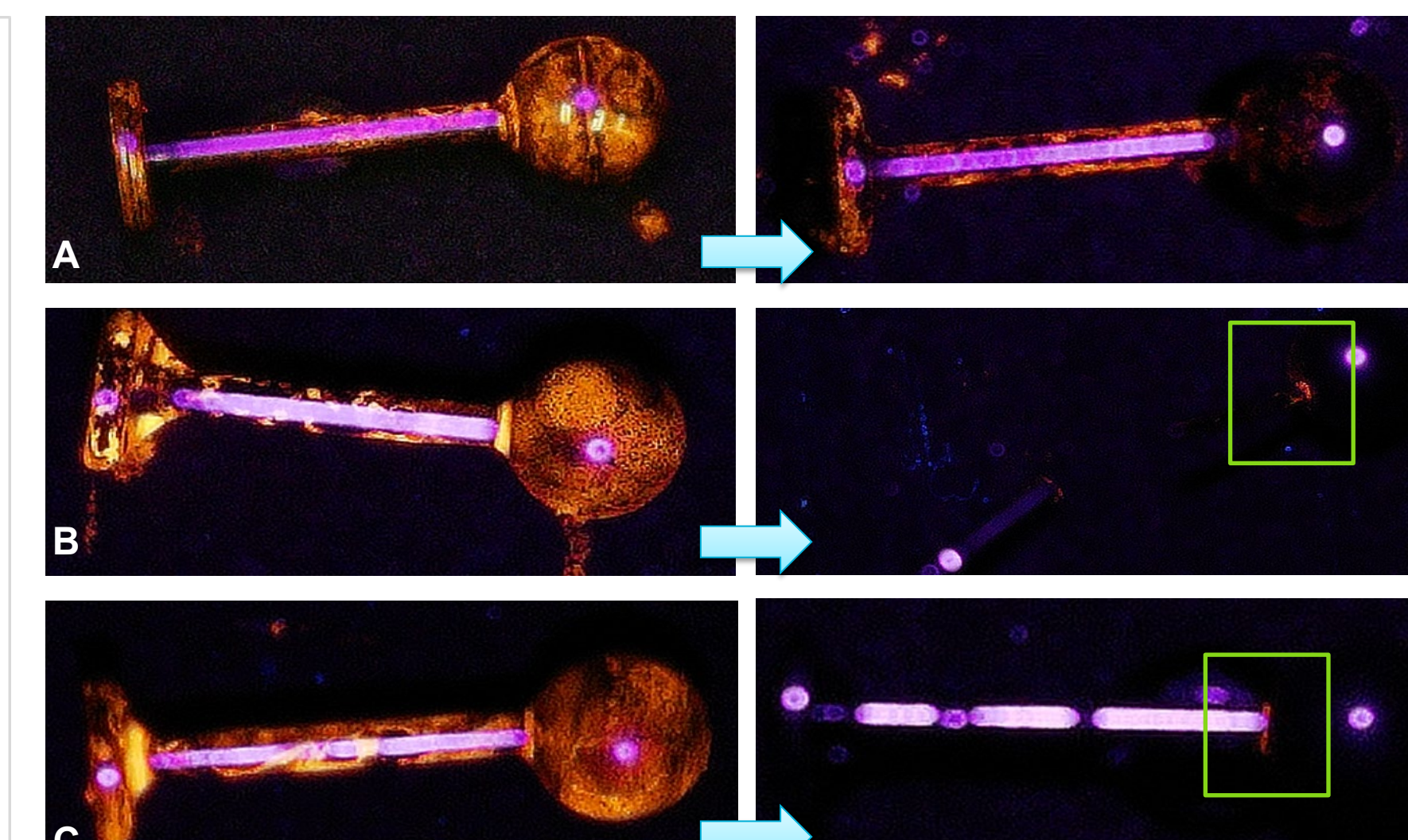
**Figure 3. Percent of area with Glo Germ contamination of pig skin and silicone ears over the course of a 5-minute rinse with water.**



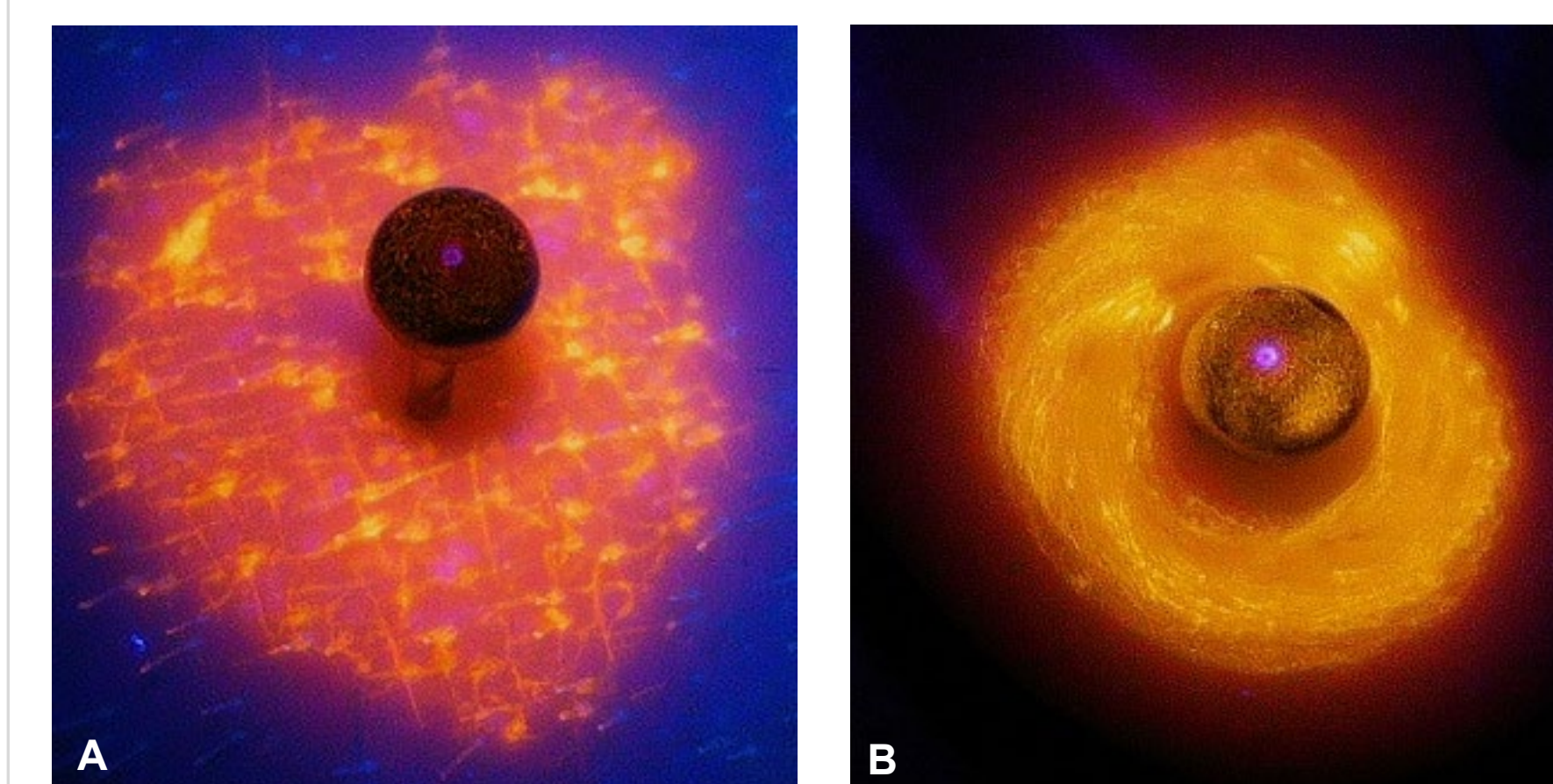
**Figure 4. Images used to calculate percent area of pig skin contamination in figure 3.** Box (A) highlights imaging challenges caused by lighting artifacts. Box (B) highlights how intensity can decrease while area increases due to Glo Germ spreading during the rinse treatment.



**Figure 5. Percent area of Glo Germ contamination of (A) silicone ears and (B) pig skin pre- and post-treatment.** NJ= No jewelry; J= jewelry; Scrub= 20 seconds of mechanical scrubbing; Soap= Suave Bodywash; Dilute GG = 1:5 dilution of Glo Germ in mineral oil.



**Figure 6 Jewelry only pre- and post-treatment (A) 1 minute rinse (B) 1 minute rinse + 20 second scrub (C) 1 minute rinse +20 second scrub with soap. Note difficult to decontaminate 'problem areas' boxed in green.**



**Figure 7. Close up of skin surrogates with jewelry in (A) pig skin (B) silicone ear model after Glo Germ application but before treatment.**

## Discussion

- Soap and mechanical scrubbing are essential for decontamination, however the quality of scrubbing can impact efficacy
- Both skin surrogates could be effectively decontaminated, however the porosity of and presence of hairs on pig skin presented more variability and challenges
- Jewelry increases the difficulty of scrubbing the surrounding skin but, by itself, can be cleaned more easily than skin
- Depending on design and material, jewelry may have hard to decontaminate "problem areas"
- Glo Germ is effective for viewing dispersion of contamination but does not answer questions regarding agent viability and infectivity
- **Experiments with live agent are needed**

## Conclusion & Next Steps

Body modification can be a difficult topic for bio- and laboratory safety professionals to address

The capacity for piercings to act as fomites requires further research

This work could be expanded to other personal effects and medical devices

## Contact Information



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