

A simple and modulable reconstructed human epidermis as a tool to assess the effect of external aggressors

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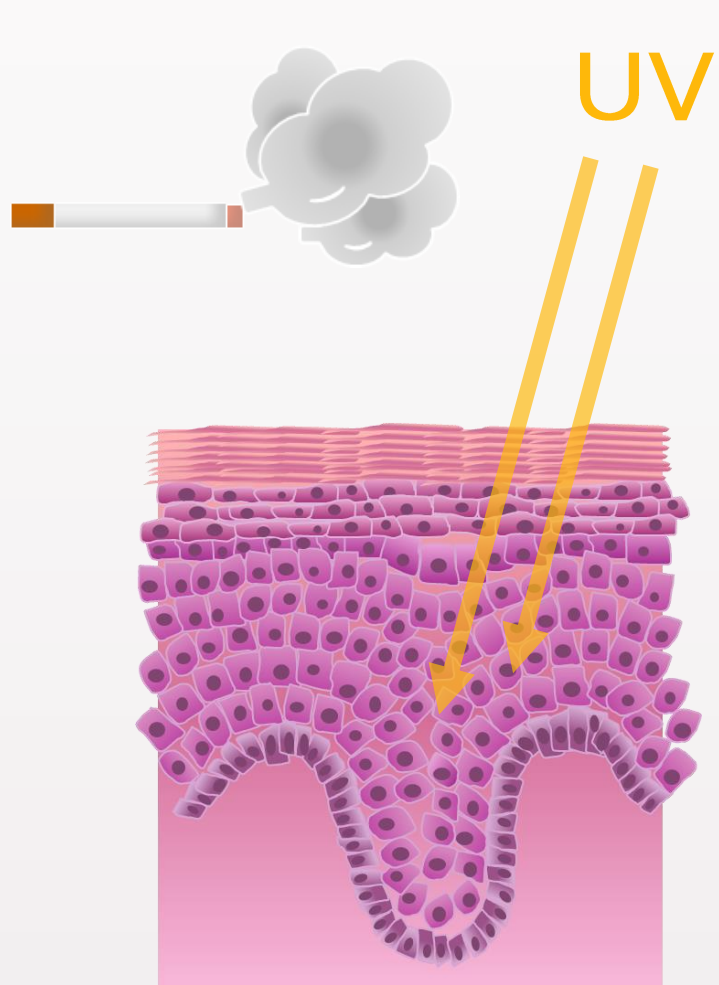
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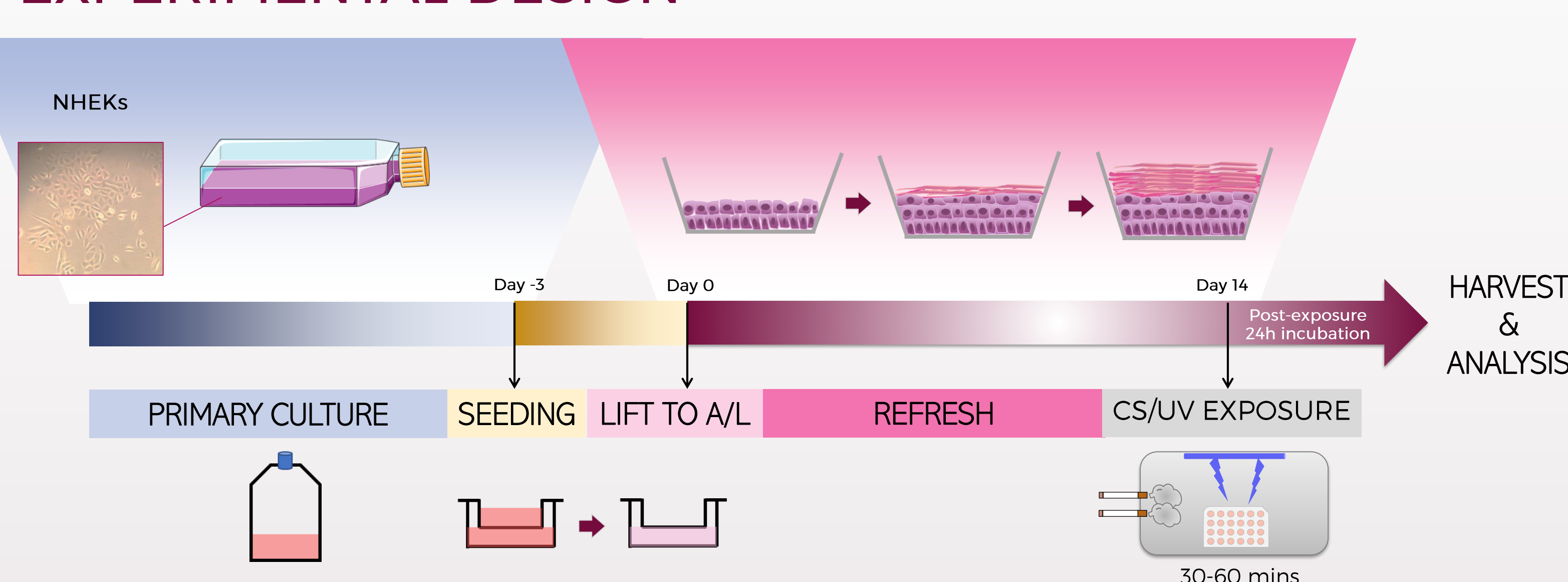


INTRODUCTION

Skin is an essential organ that provides a protective and defensive barrier against harmful elements from the external environment such as chemical substances, microbial pathogens, and physical factors. Skin models are used to assess possible hazards resulting from contact or exposure to chemical compounds and permit the obtention of irritation and toxicological data. Nowadays, greater effort is put in the development of in vitro models to replace animals due to ethical requirements. In vitro skin models can be customized and have shown a potential for a wide field of applications from cell biology to cosmetology, modelling diseases, drug development, skin ageing, pathophysiology and regenerative medicine. Today's challenge is to find the relevant skin model and exposure testing methods to fully evaluate the impact of external aggressors such as UV and Cigarette Smoke on skin in the most realistic conditions.

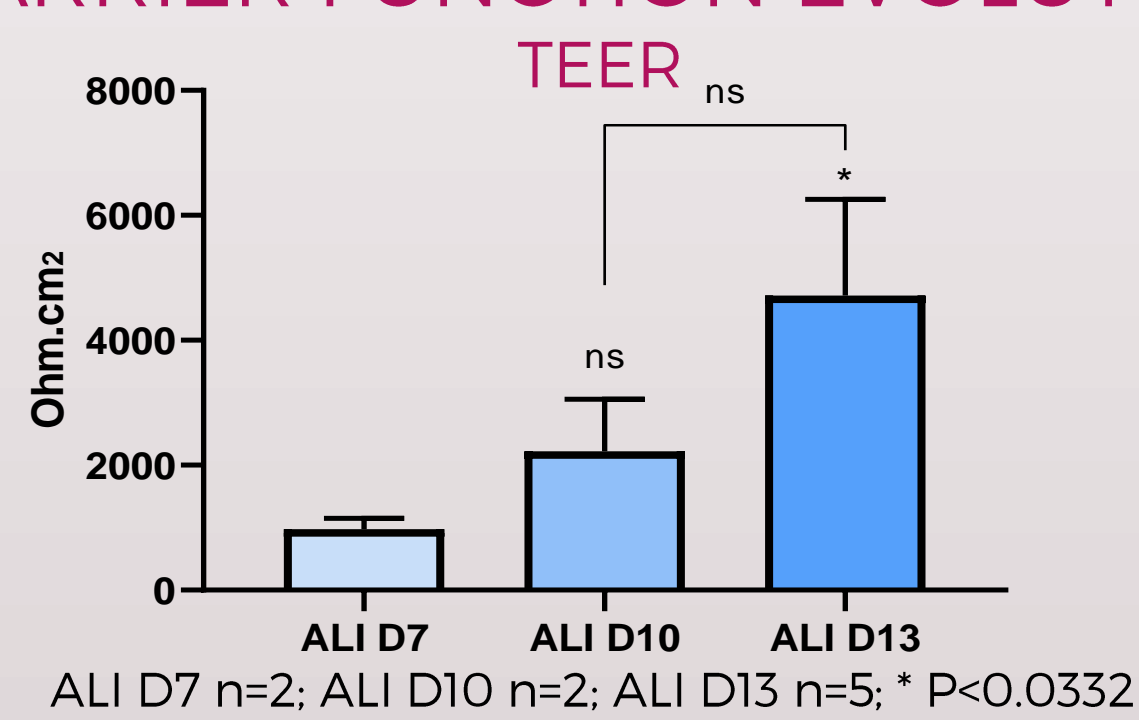


EXPERIMENTAL DESIGN

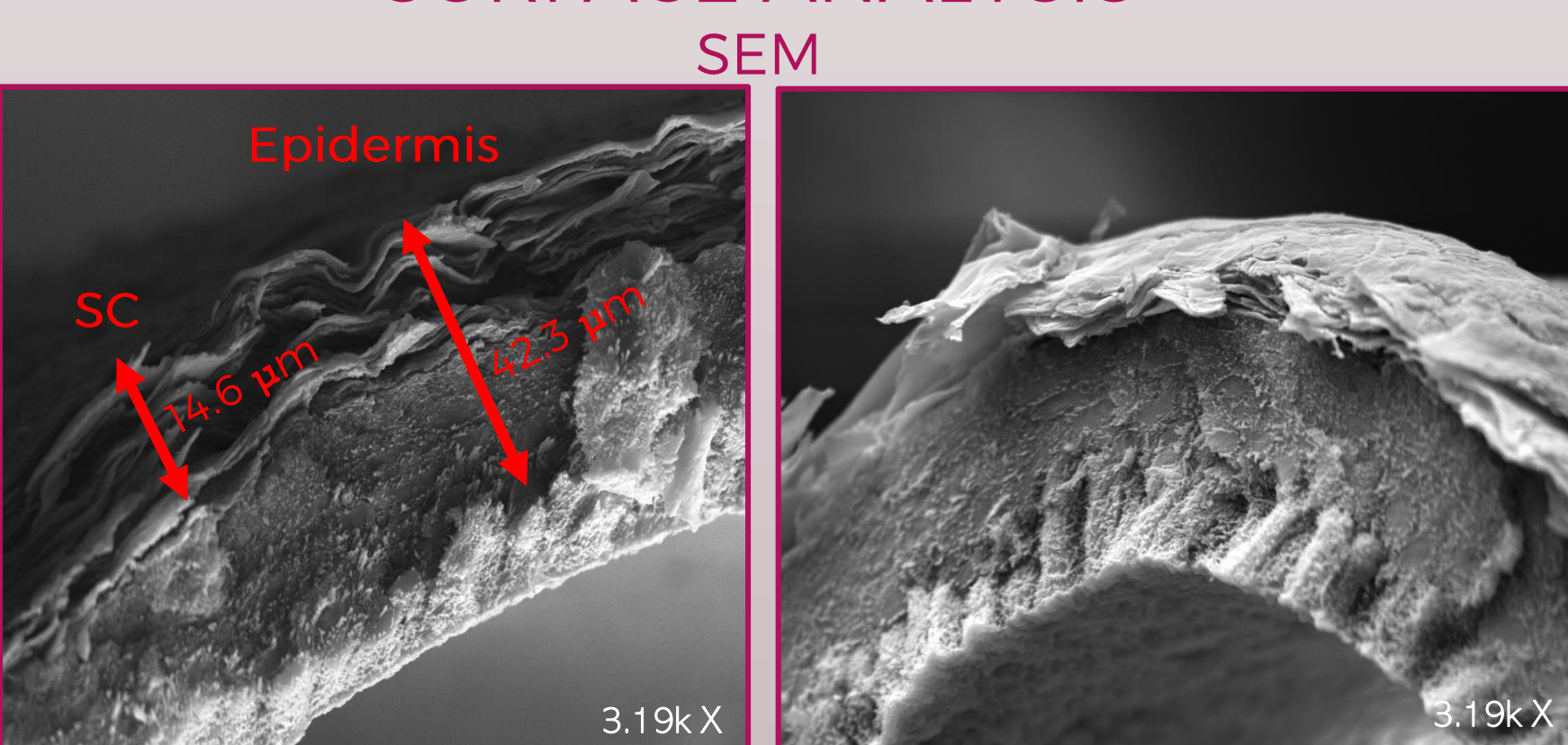


RESULTS

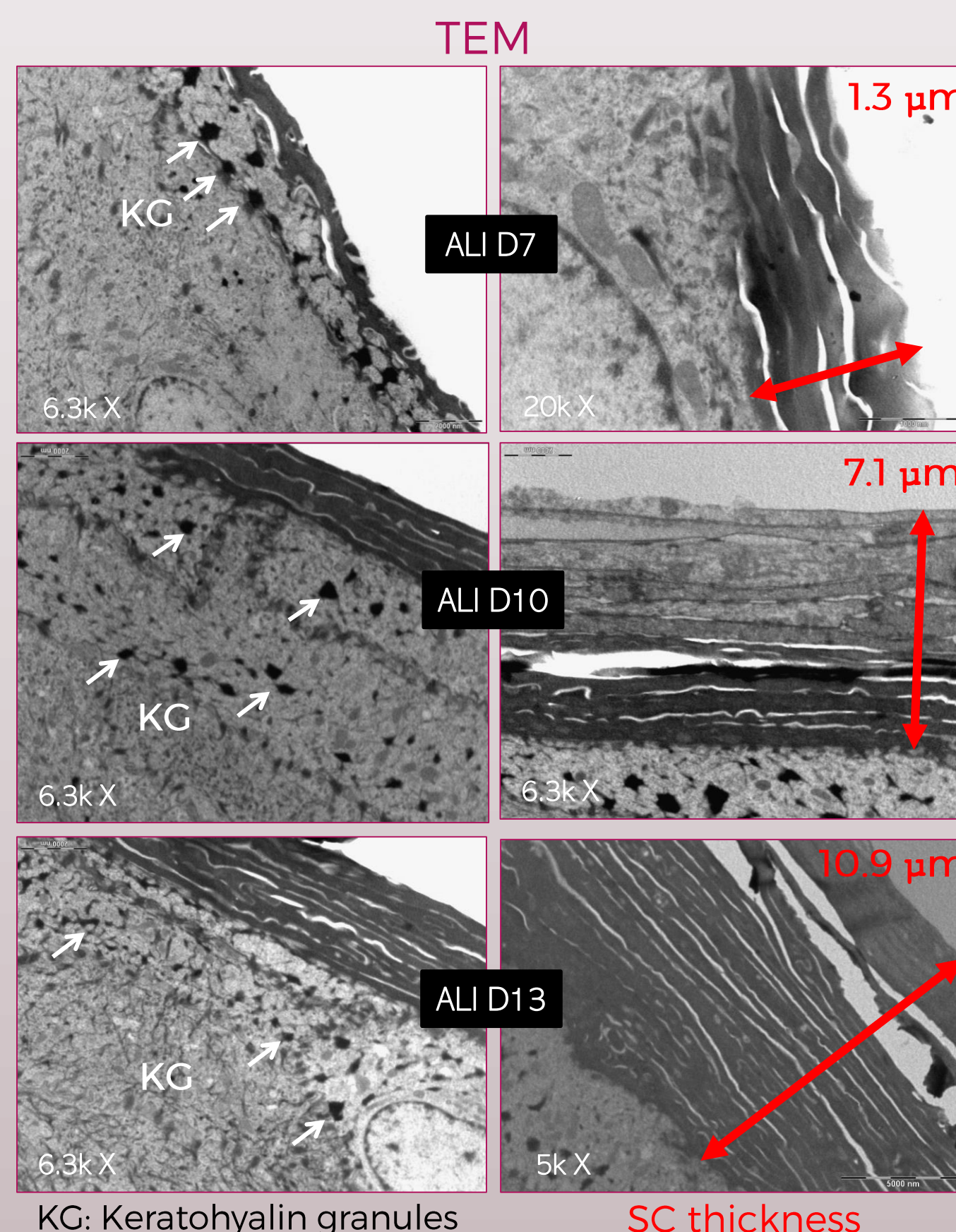
BARRIER FUNCTION EVOLUTION



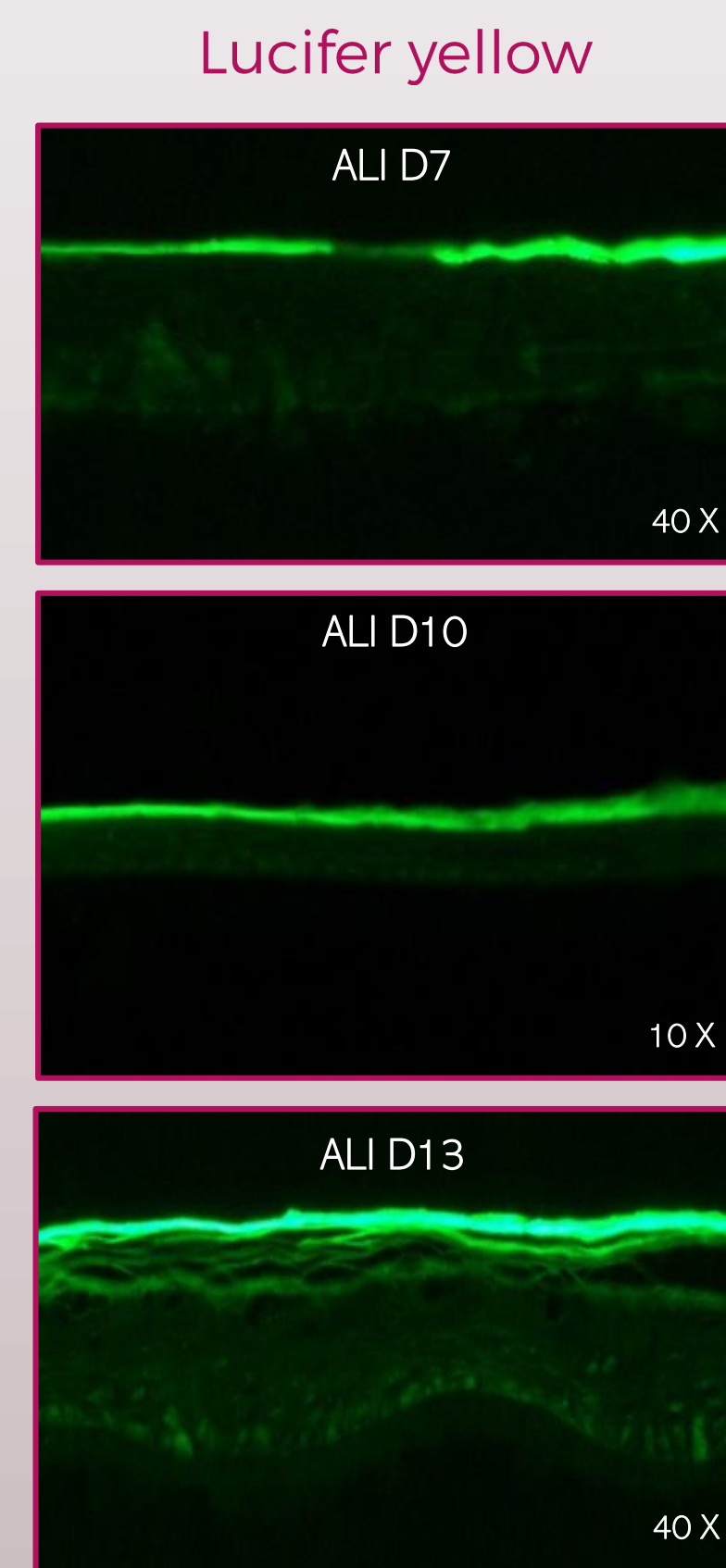
SURFACE ANALYSIS



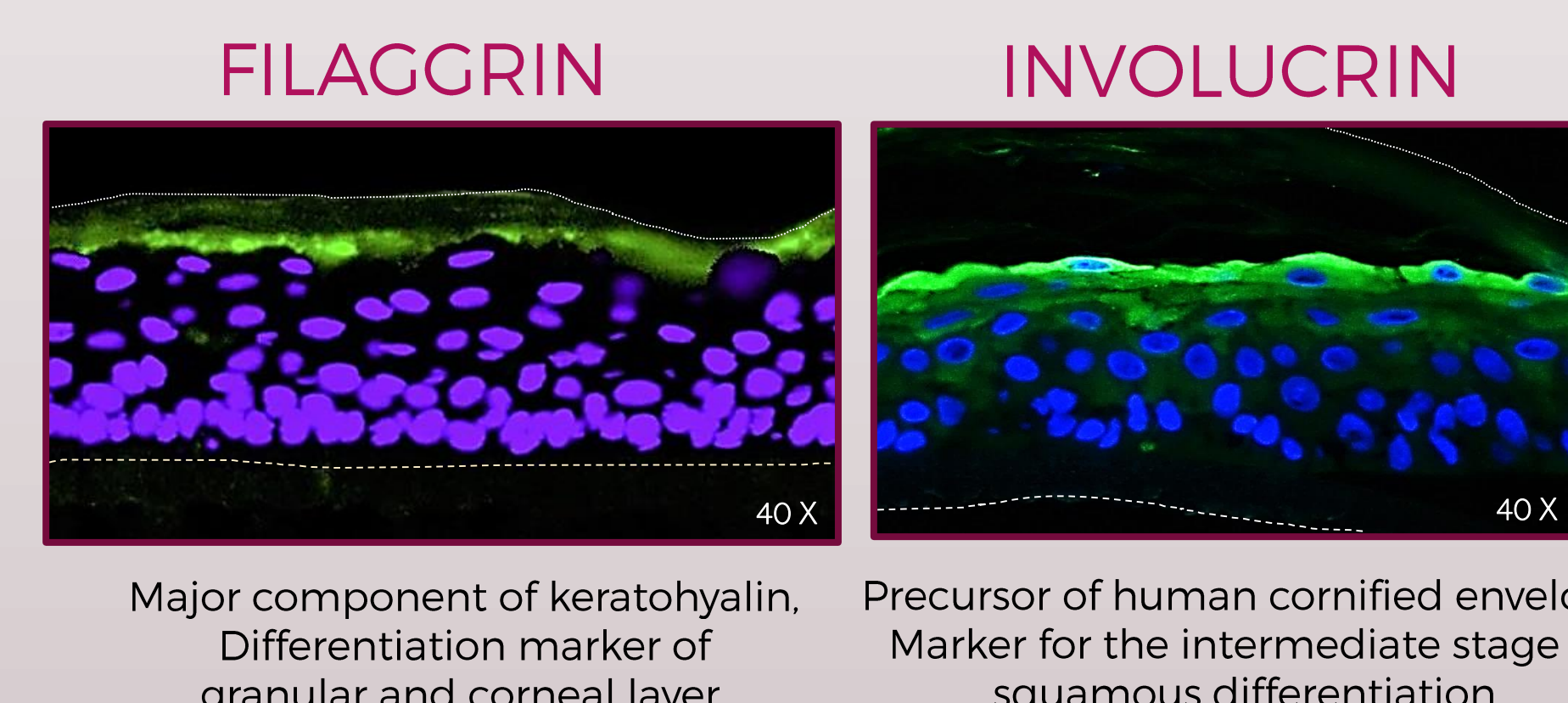
ULTRASTRUCTURE EVOLUTION



BARRIER PERMEABILITY



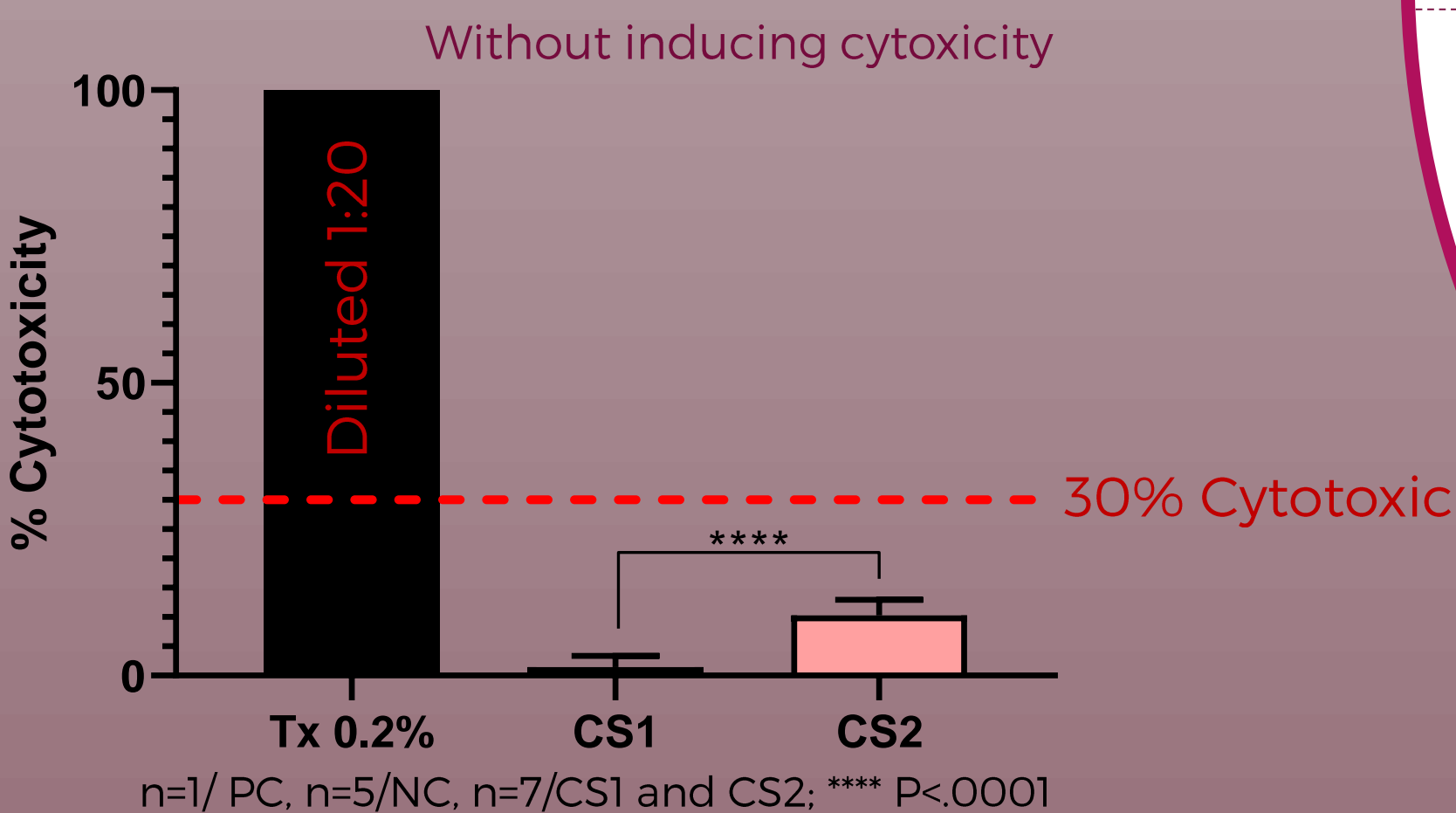
LOCALIZATION OF EPIDERMAL PROTEINS



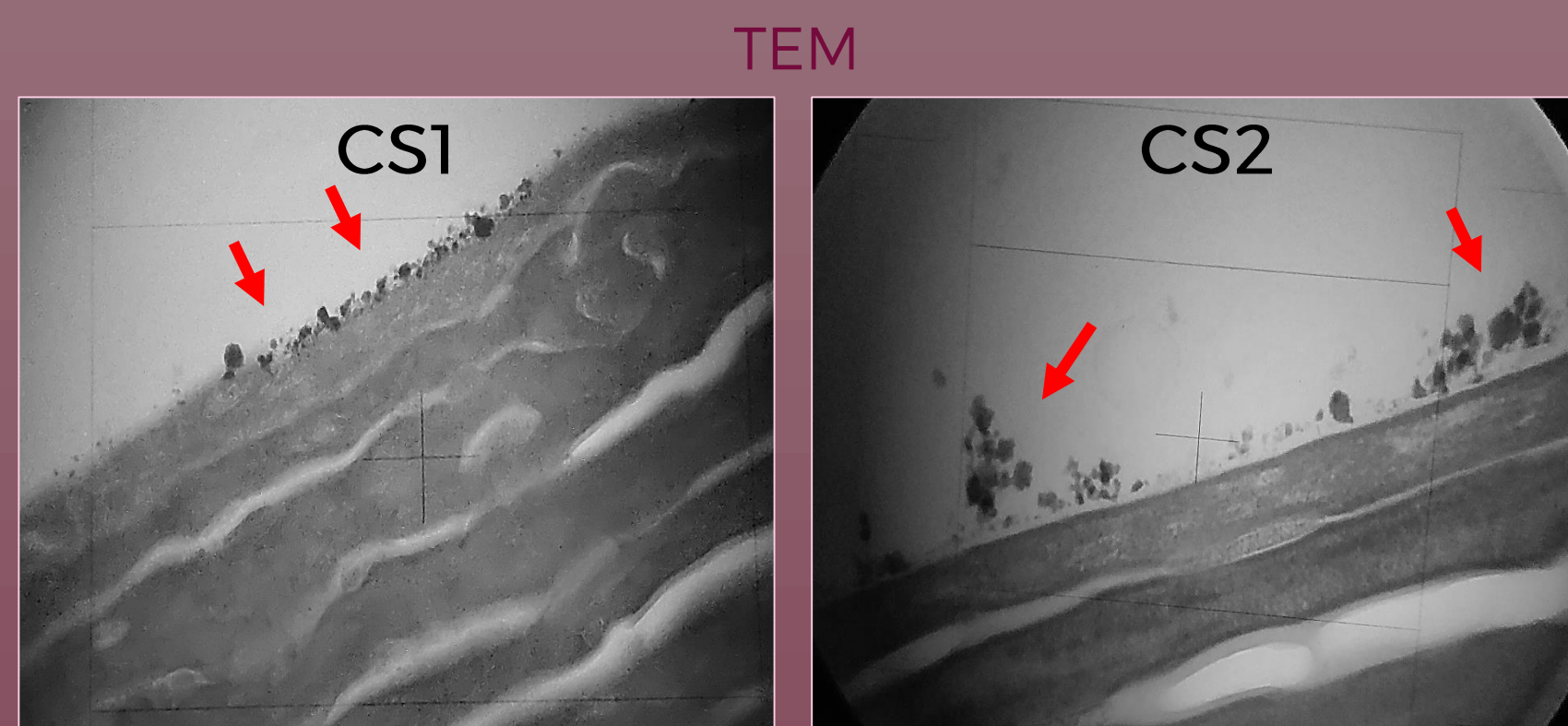
CIGARETTE SMOKE (CS) EXPOSURE



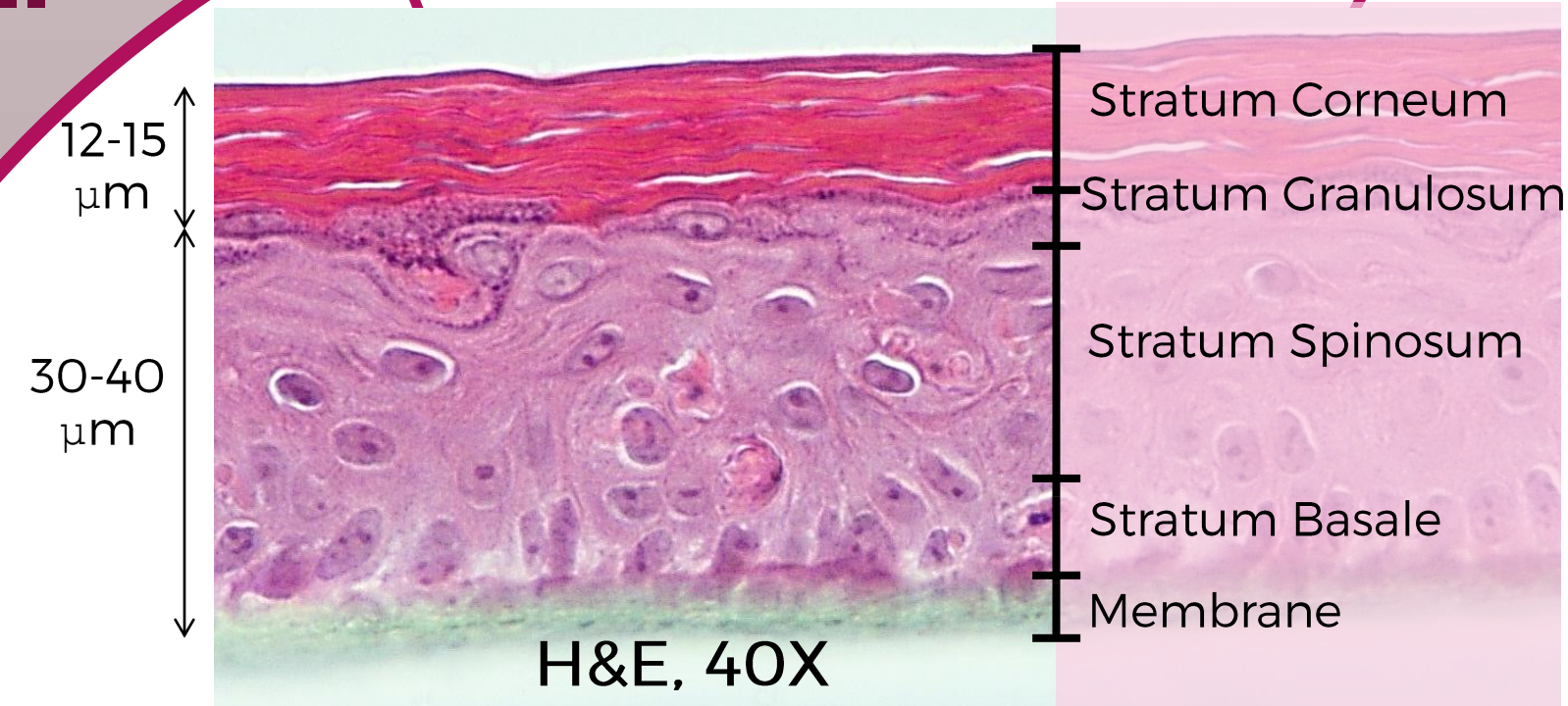
CS INCREASED LDH RESPONSE



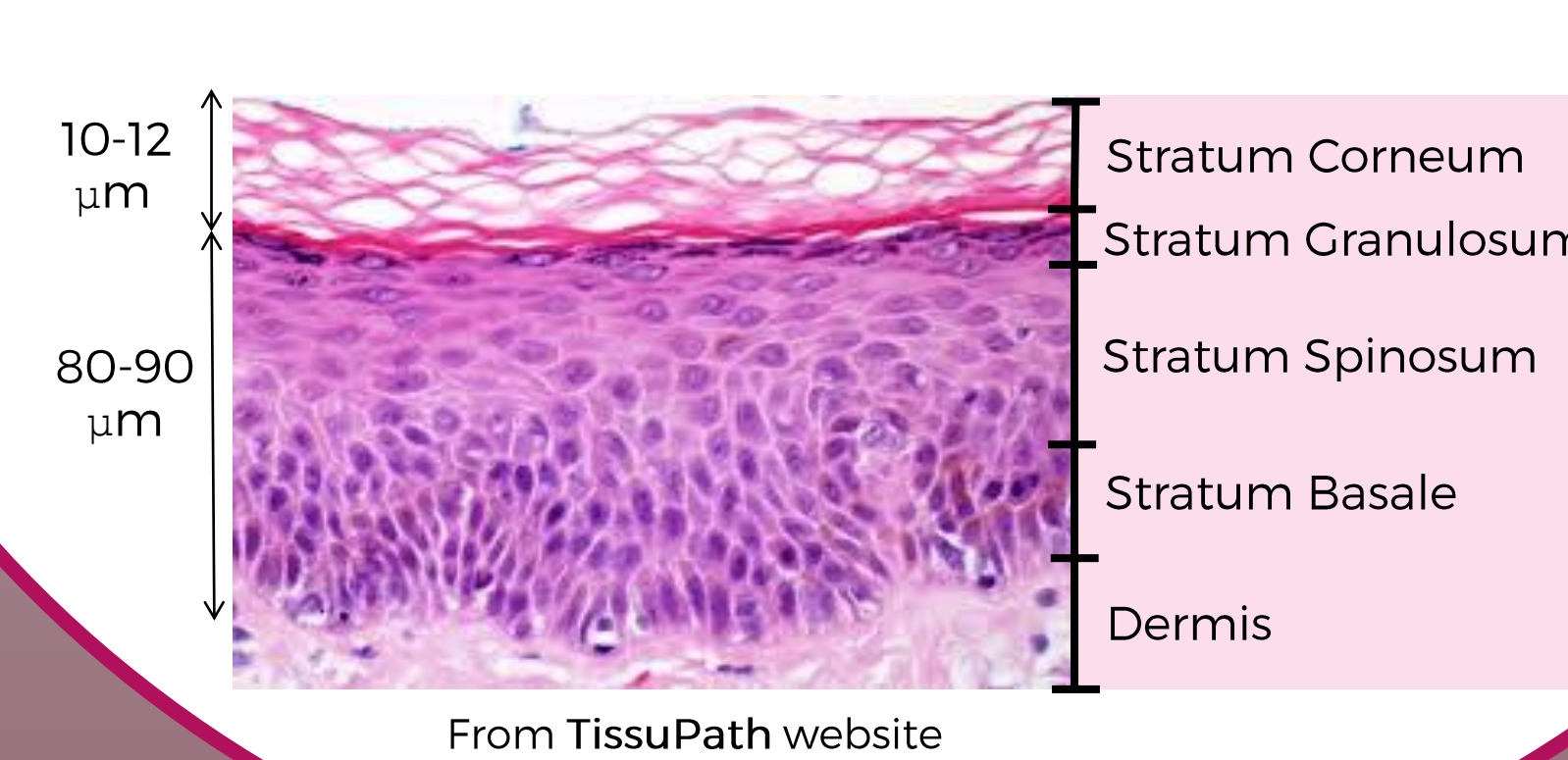
ADHERED CS PARTICLES ON TOP SKIN LAYER



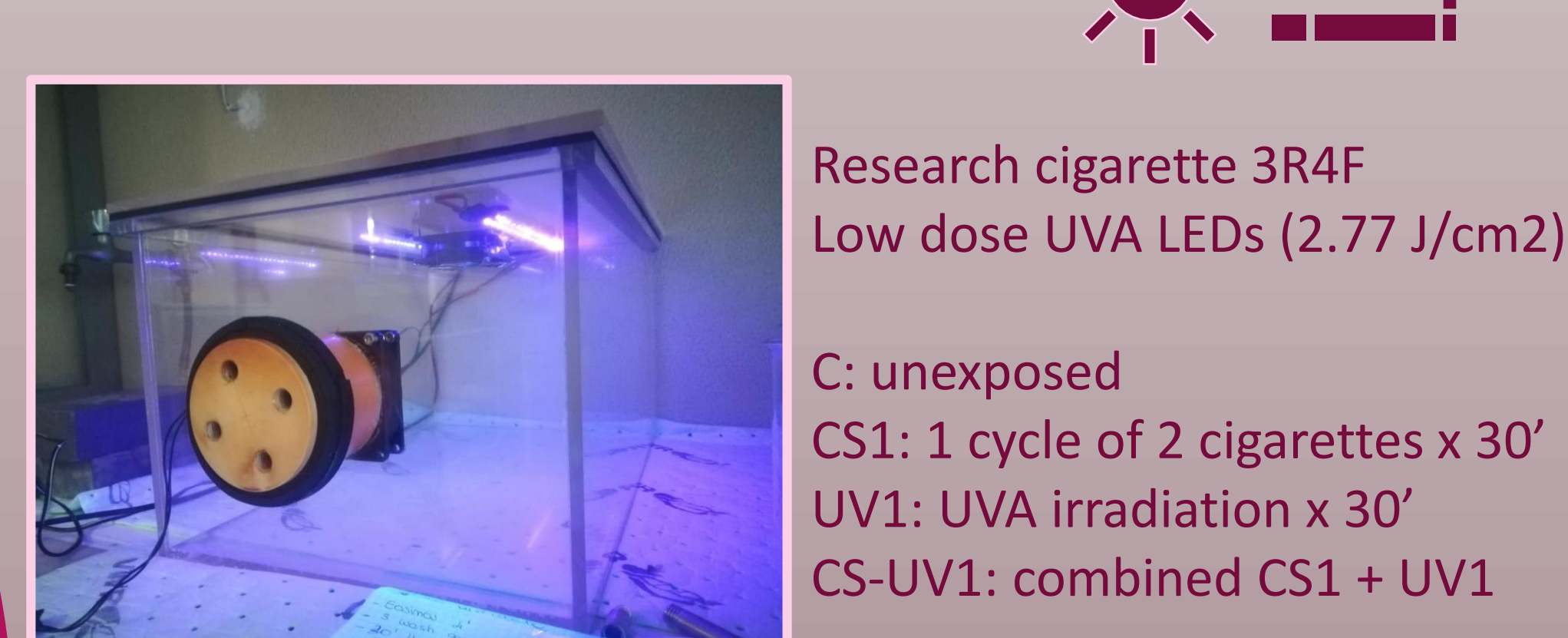
MORPHOLOGY



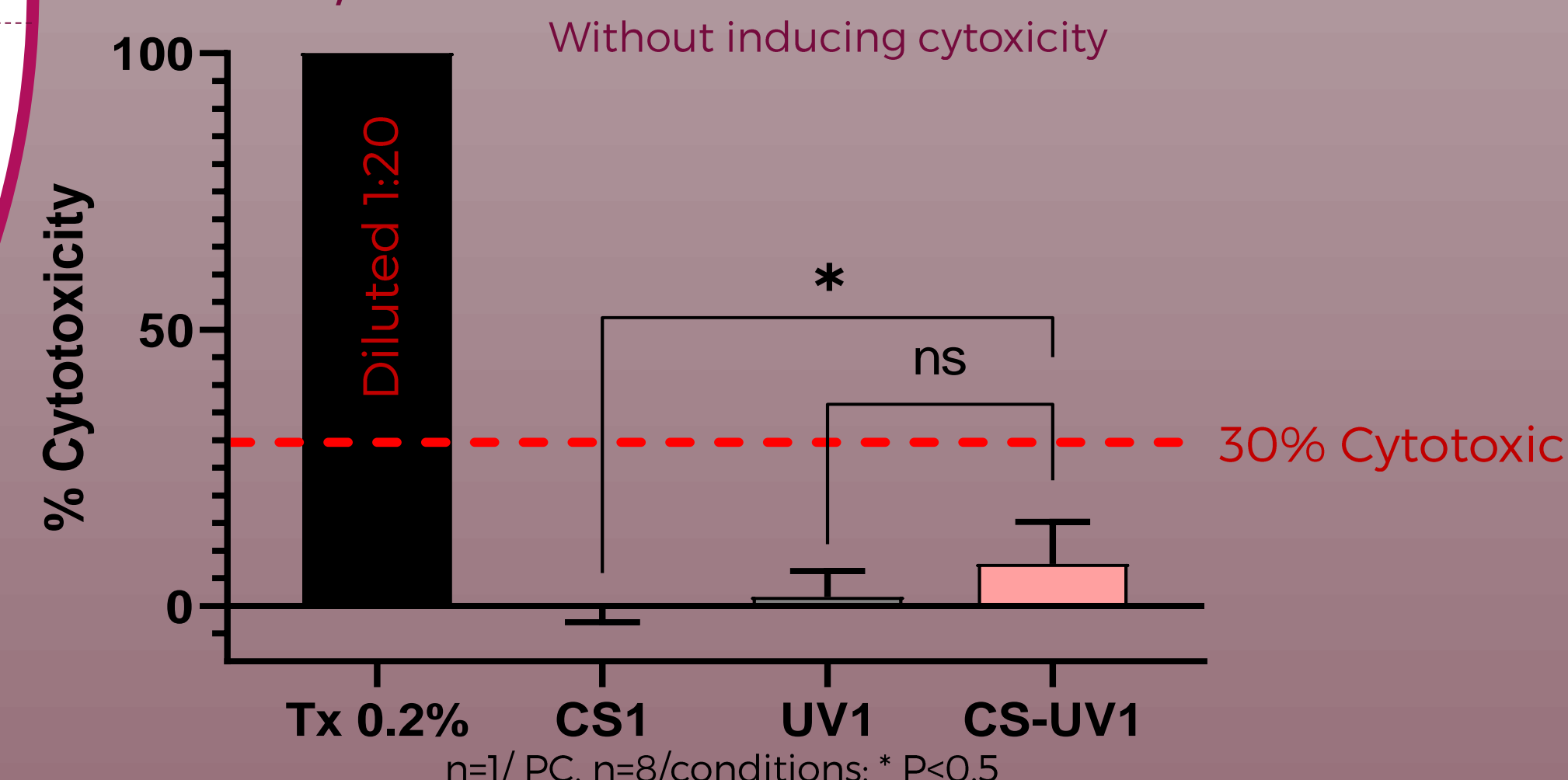
IN VITRO SKIN EPIDERMIS VS. IN VIVO SKIN EPIDERMIS



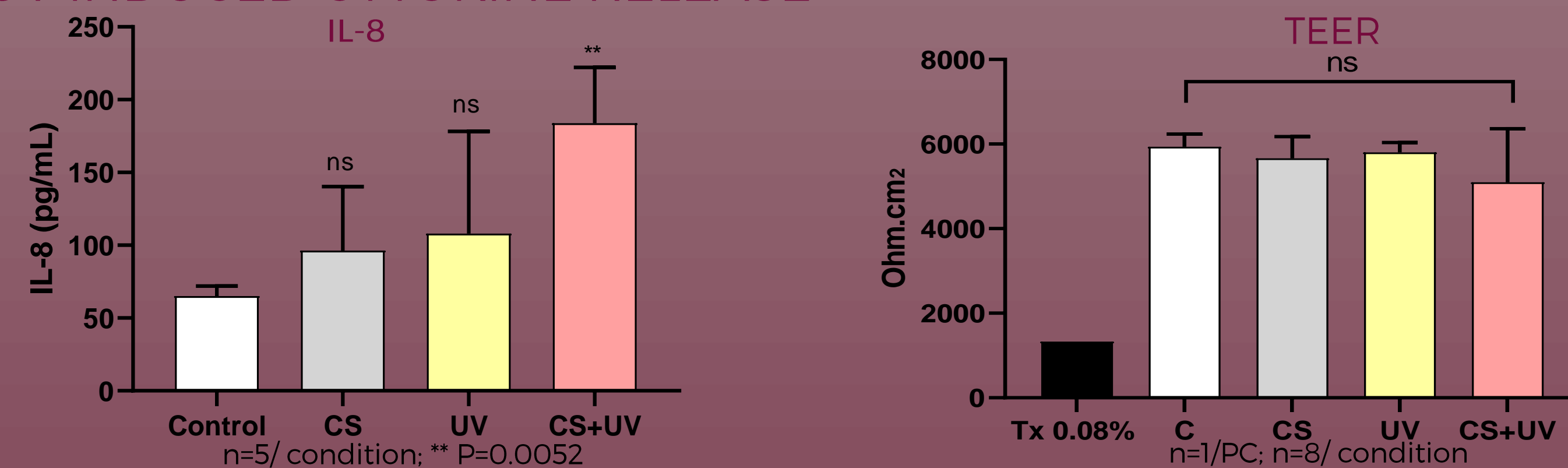
CS + UVA EXPOSURE



CS/UV INCREASED LDH RESPONSE



CS-UV INDUCED CYTOKINE RELEASE UNALTERED BARRIER FUNCTION



CONCLUSIONS

IN HOUSE RHE MODELS:

- SHOW SIMILAR MORPHOLOGY AND ULTRASTRUCTURE TO NATIVE HUMAN SKIN
- SHOW PROINFLAMMATION RESPONSES UPON LOW DOSE OF CS/UV EXPOSURE

SIMPLE AND MODULABLE EPIDERMAL MODEL AS A USEFUL TOOL:

- FOR EXPOSURE AND COMPOUND TESTING
- TO MIMIC PATHOLOGICAL FEATURES
- TO INVESTIGATE BIOLOGICAL PATHWAYS

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ACKNOWLEDGEMENTS

This research work is part of the CITYCARE project which has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 765602.

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