

# Evaluation of Corneal Cross-linking for Treatment of Fungal Keratitis: Using Confocal Laser Scanning Microscopy on an *Ex-Vivo* Human Corneal Model

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PhD Student

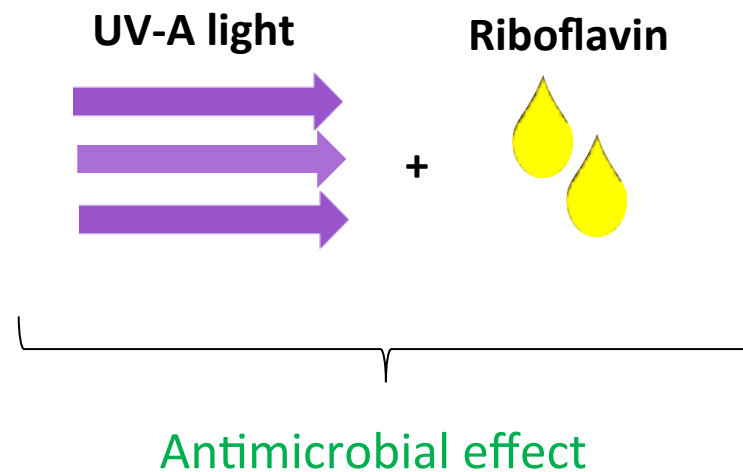
Faculty of Biology, Medicine and Health

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Manchester, UK

# Overview

- Fungal Keratitis
- Photoactivated Chromophore for Keratitis-Corneal Cross-linking (PACK-CXL)

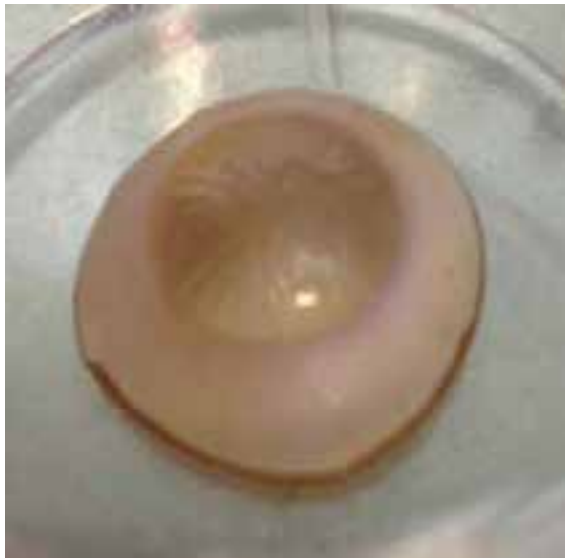


# Aims

- Establishing a human *Fusarium* infection model, *in vitro*
- Evaluating the efficacy of the UV-A/riboflavin combination in treating *Fusarium* keratitis

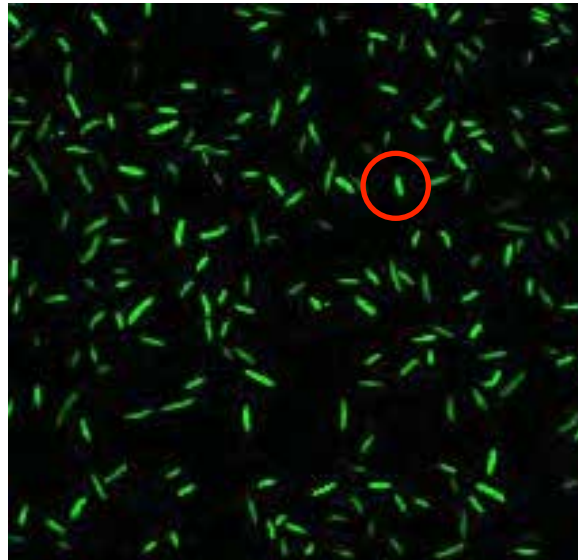
# Methods

- Post-mortem human corneal buttons
- Fluorescent labelled *Fusarium oxysporum*
- Confocal microscope



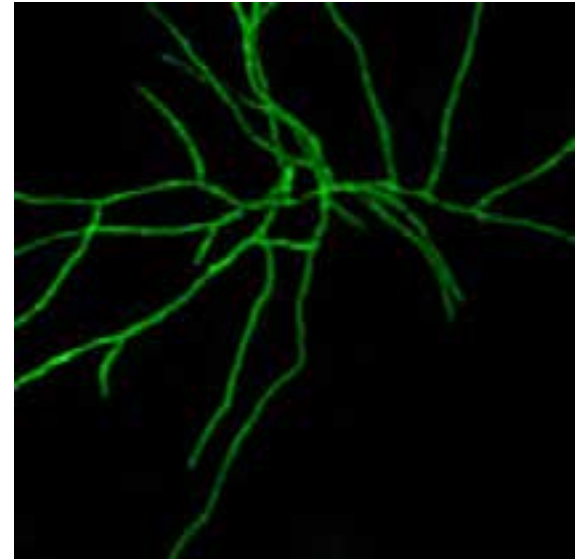
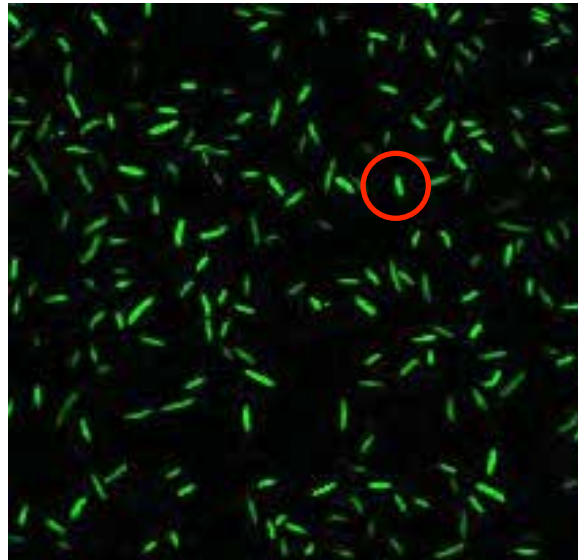
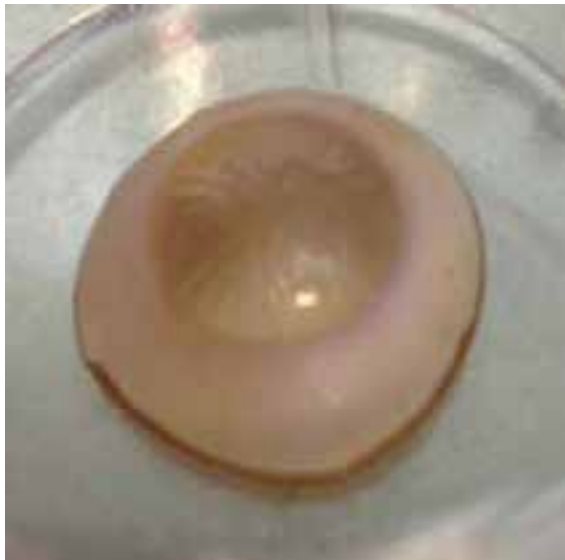
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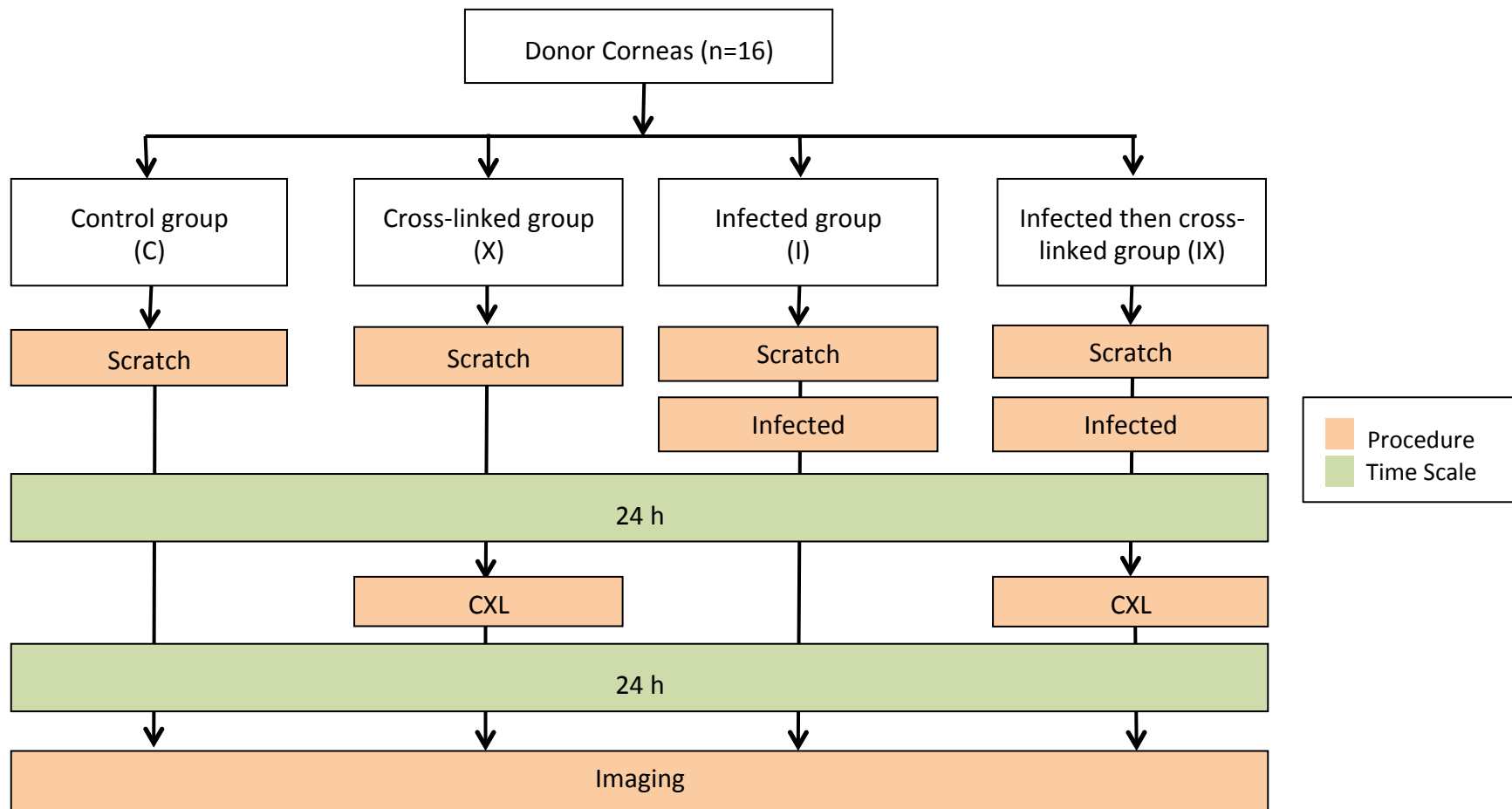


# Methods

- Post-mortem human corneal buttons
- Fluorescent labelled *Fusarium oxysporum*
- Confocal microscope



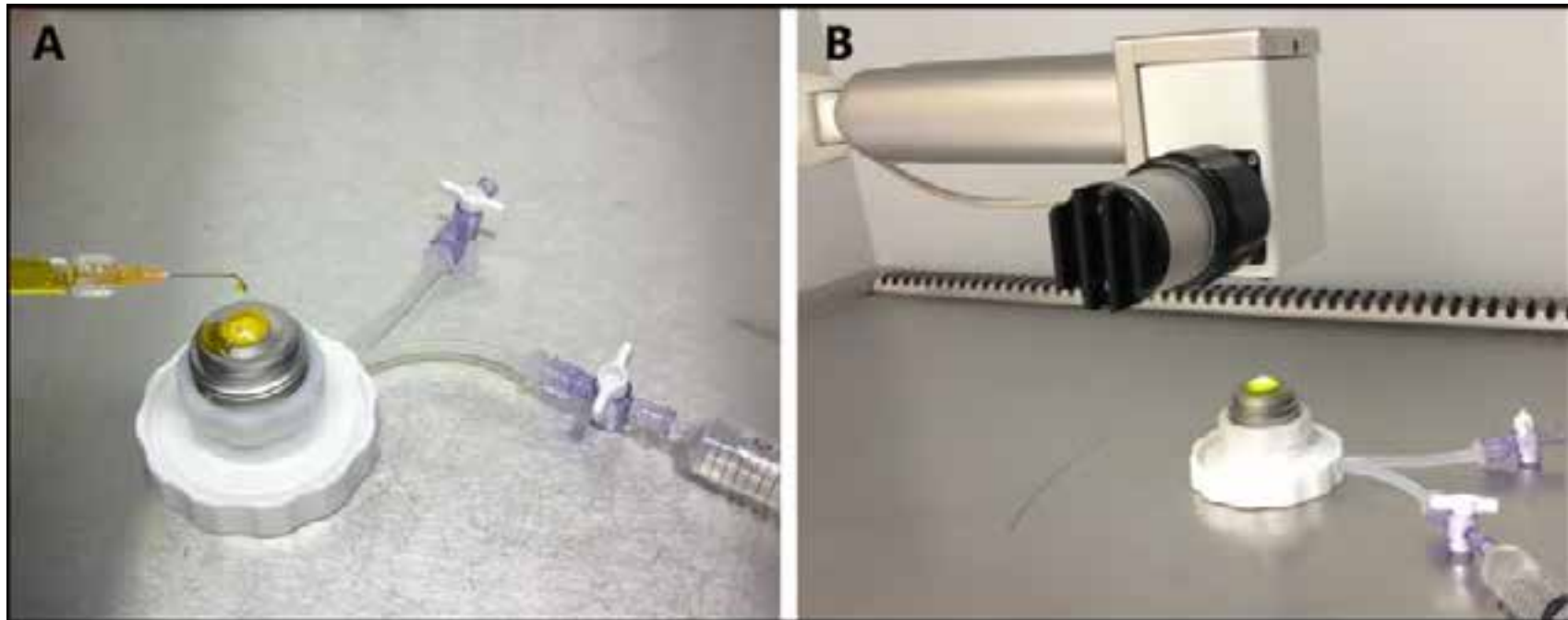
# Methods





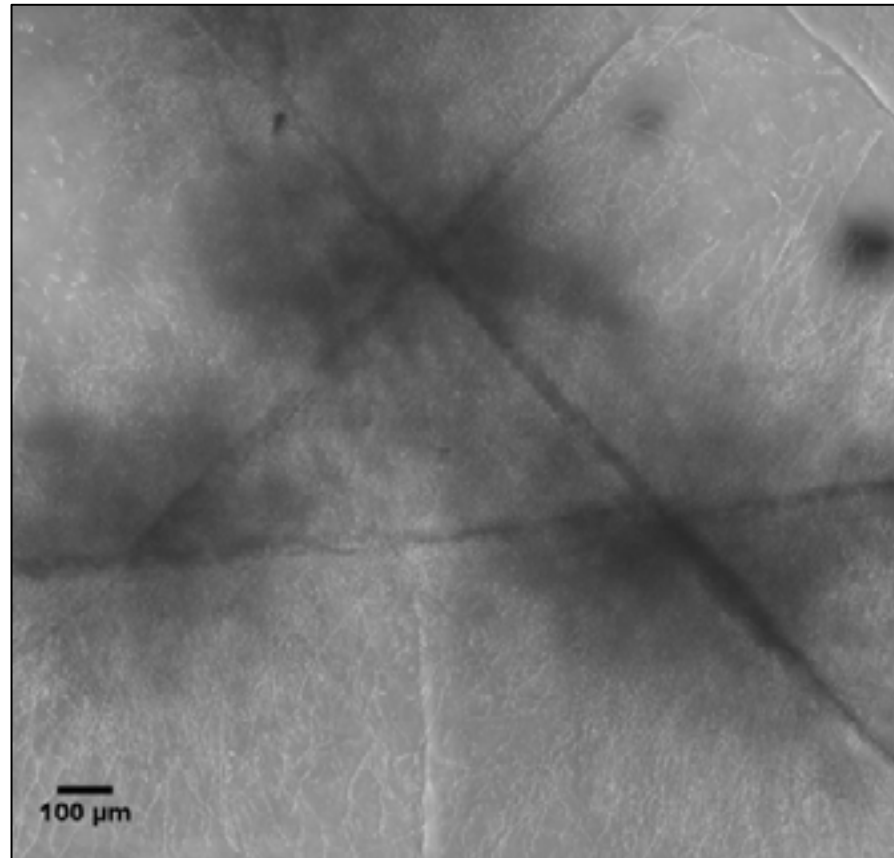
# Methods

- CXL procedure



# *Ex-vivo* human *Fusarium* keratitis model

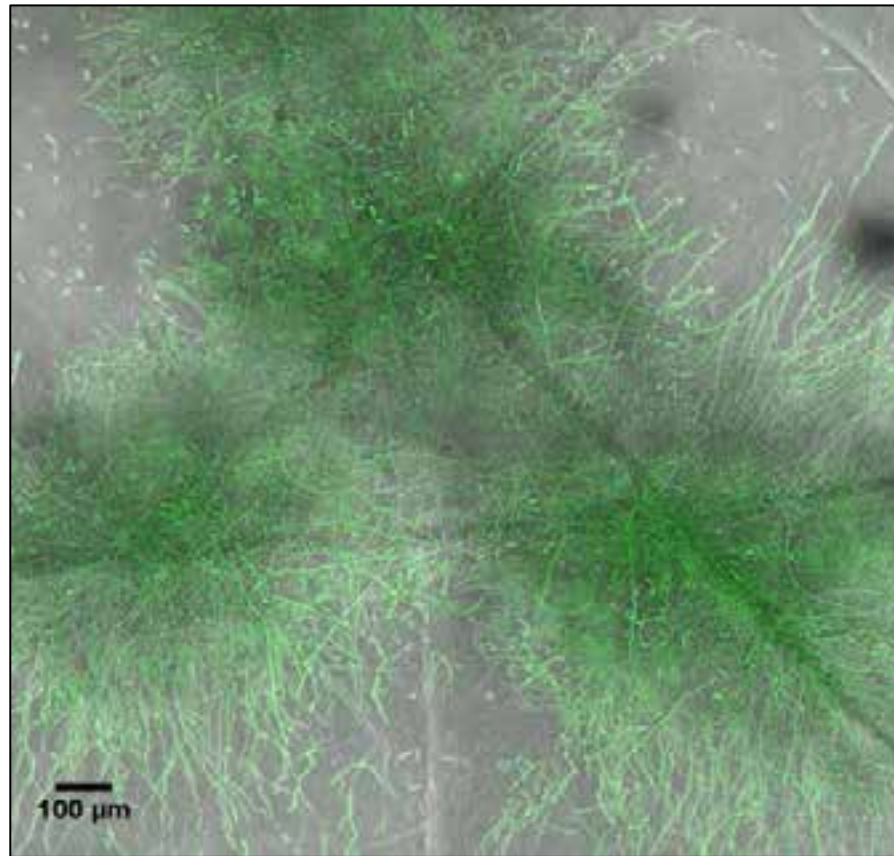
- Confocal Microscopy



Bright Field

# *Ex-vivo* human *Fusarium* keratitis model

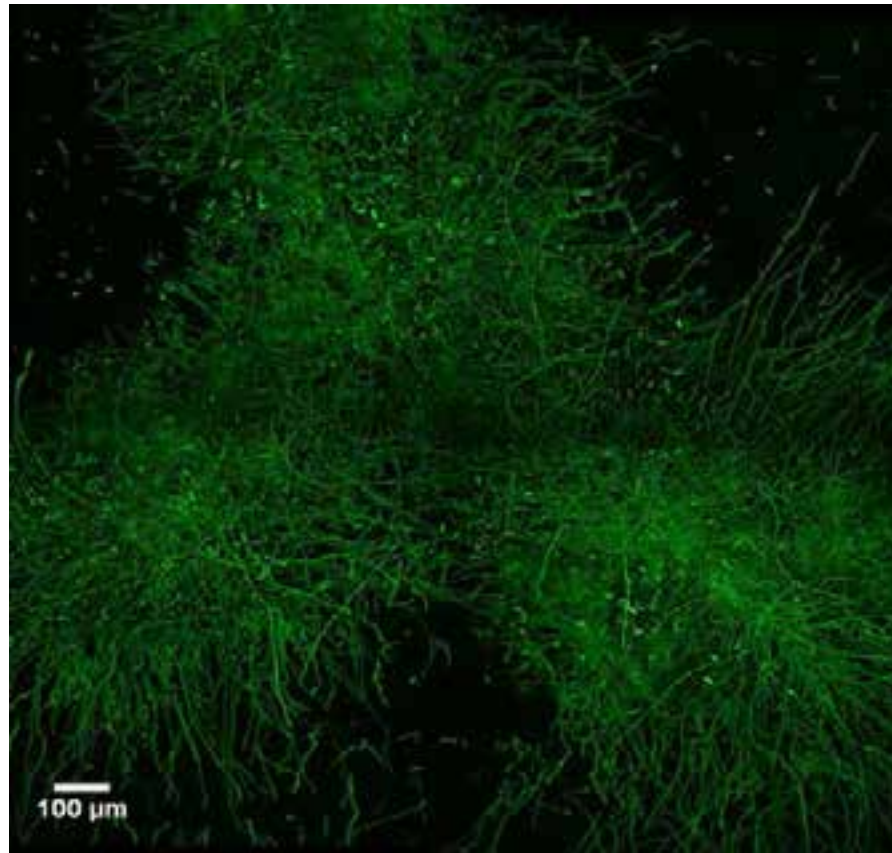
- Confocal Microscopy



merged Bright Field  
and Green Channels

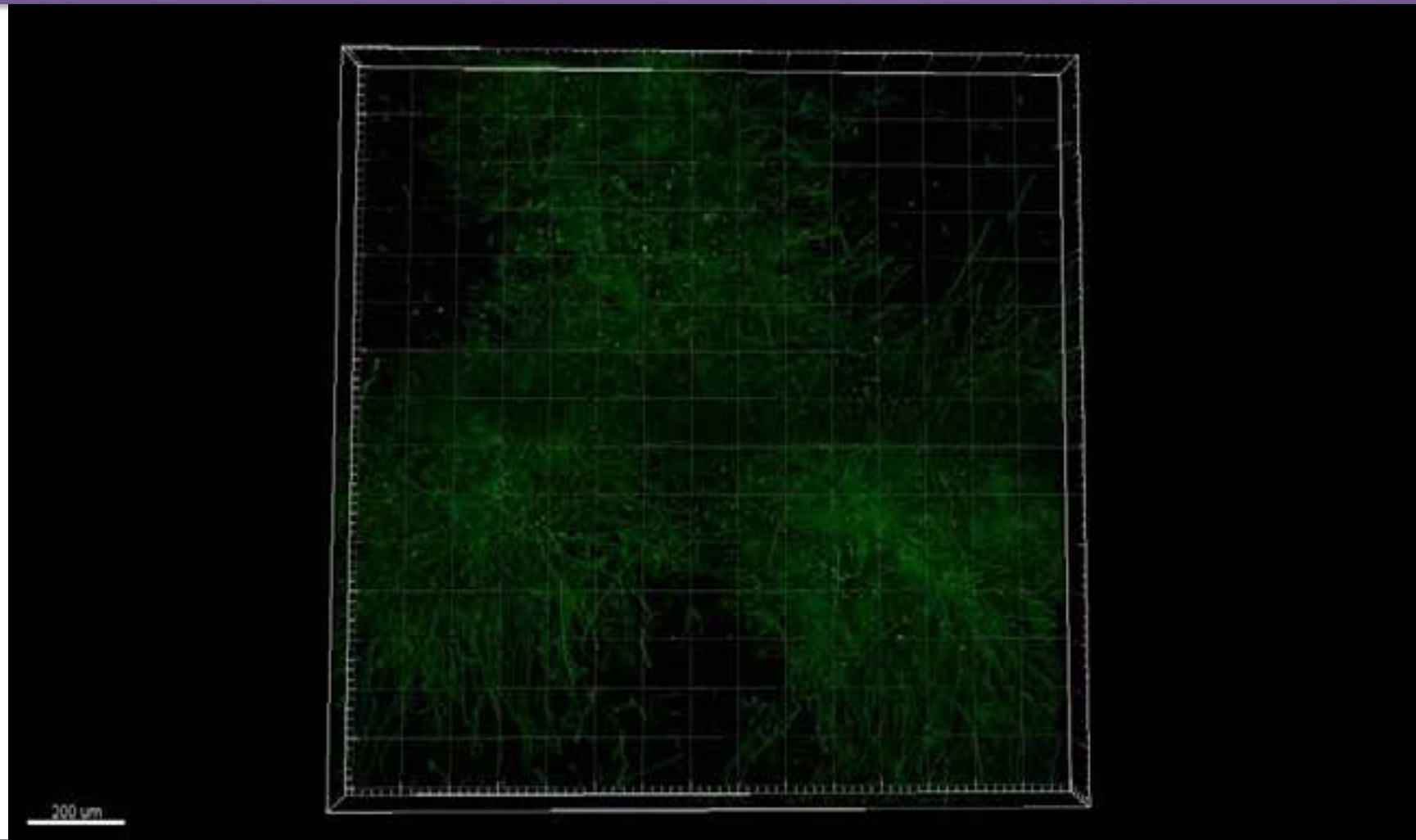
## *Ex-vivo* human *Fusarium* keratitis model

- Confocal Microscopy



Green Channel

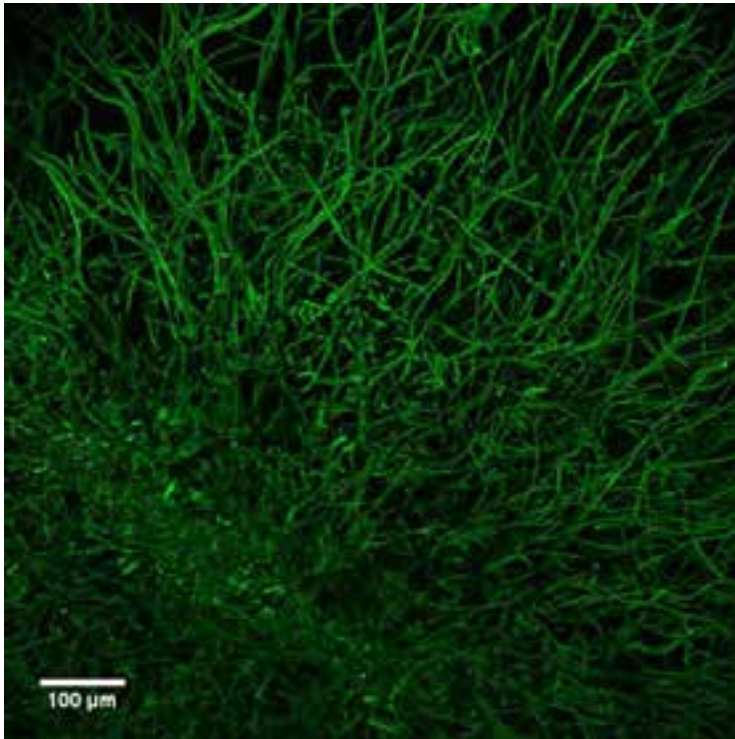
# 3D confocal imaging for an *ex-vivo* human *Fusarium* keratitis model



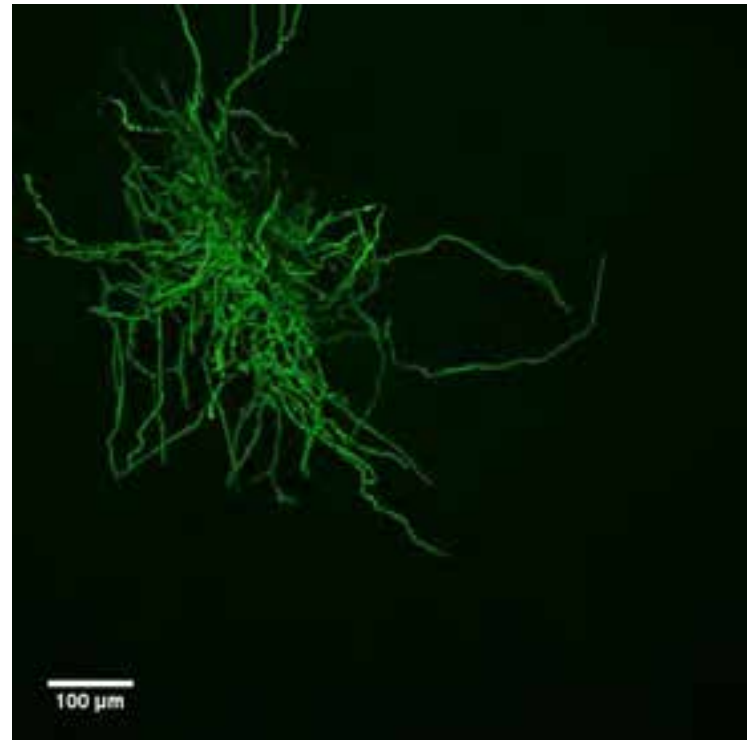
Contact: [jawaher.alshehri@postgrad.manchester.ac.uk](mailto:jawaher.alshehri@postgrad.manchester.ac.uk)



# Results

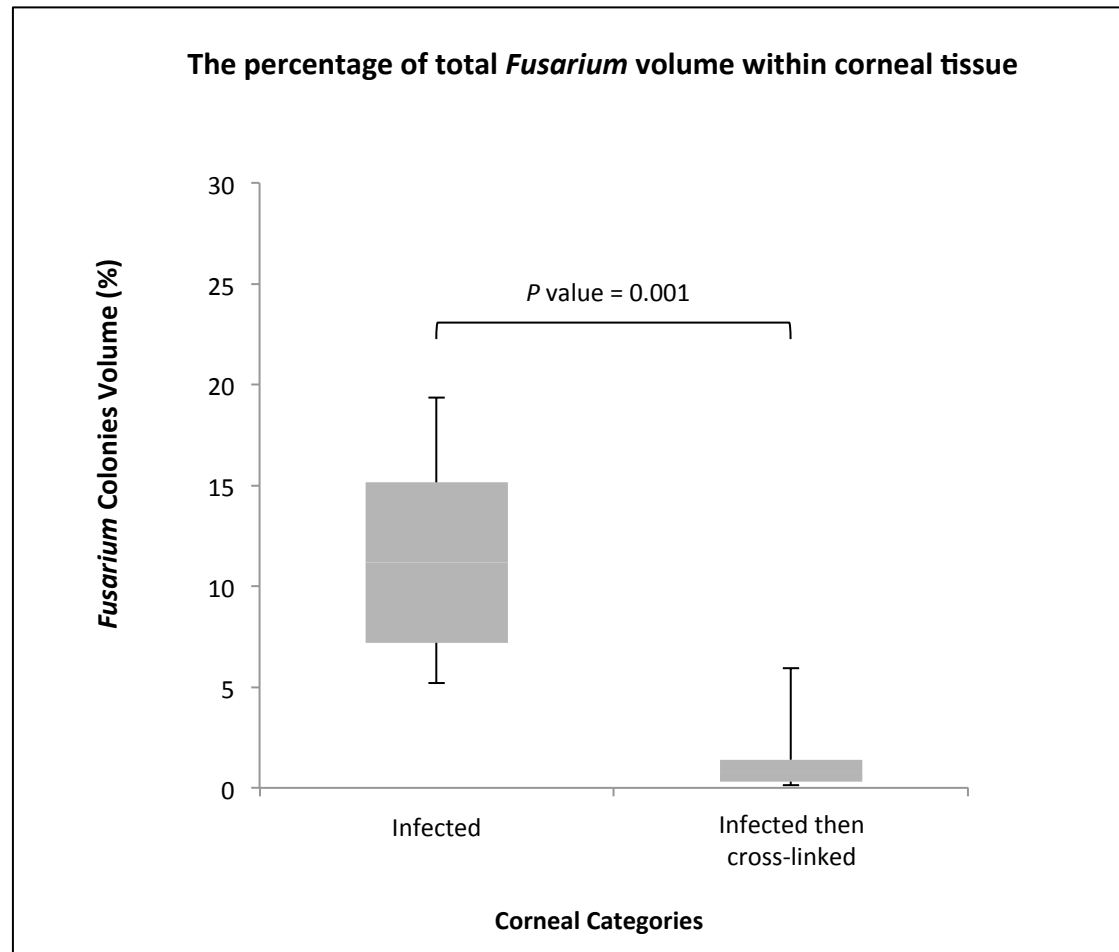


Infected cornea

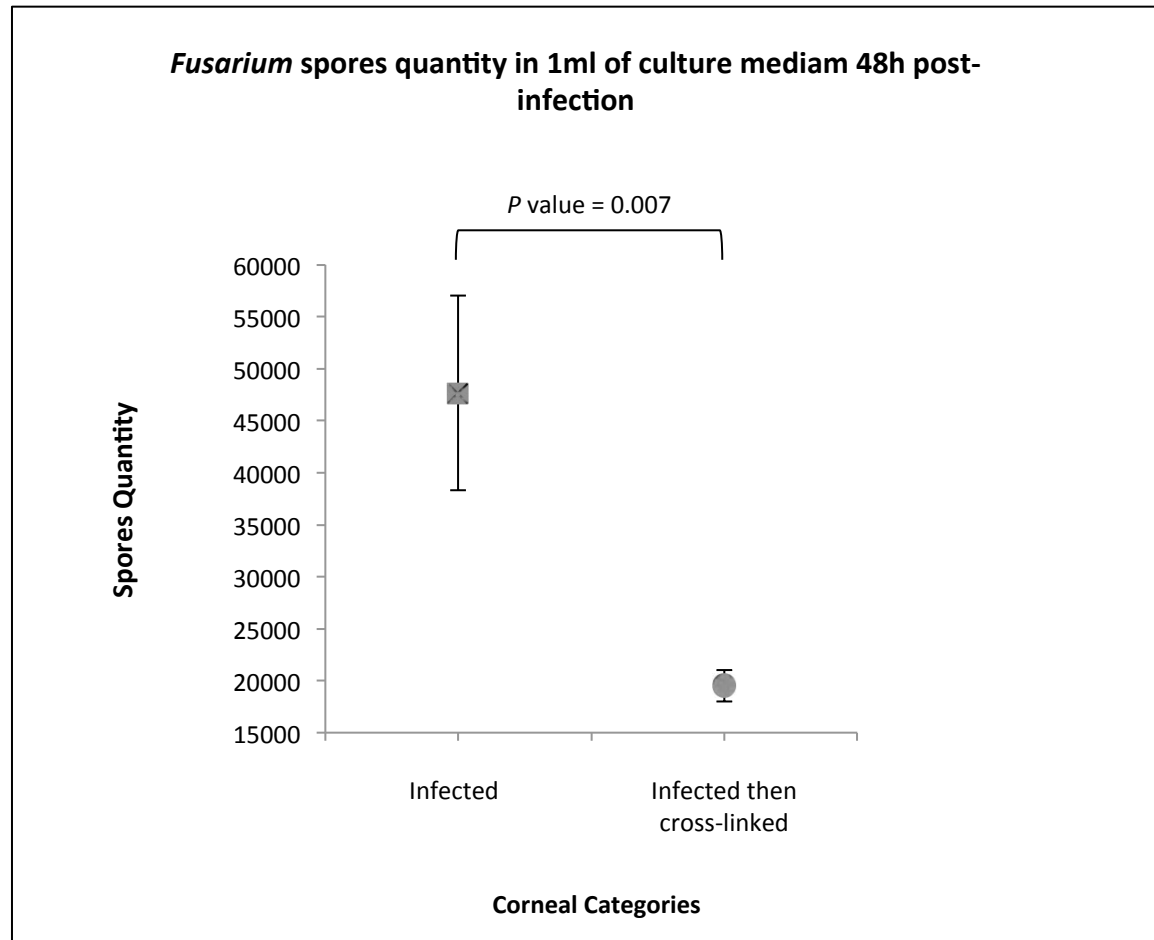


Infected then cross-linked cornea

# PACK-CXL is supressing the *Fusarium* hyphal growth



# PACK-CXL is inhibiting the *Fusarium* sporulation

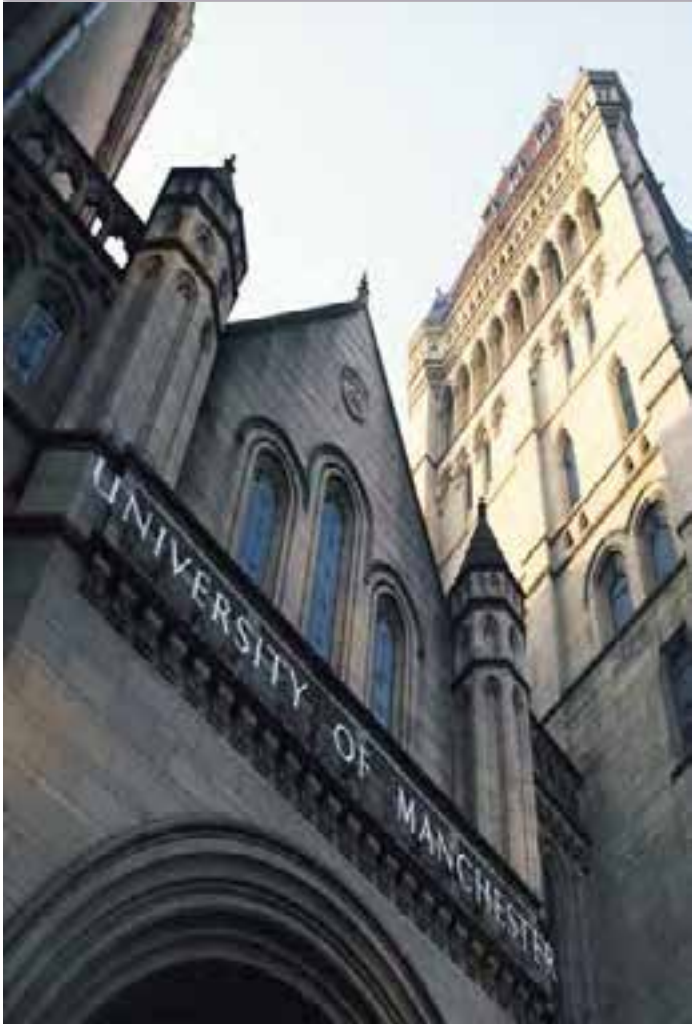




# Conclusion

Corneal collagen cross-linking procedure could be a promising approach in the management of *Fusarium* keratitis.

# Acknowledgment



To the Manchester Eye Bank for providing the human corneal buttons for this study.

Supported by Ministry of Health, Riyadh, Saudi Arabia (JMA). DC-L was supported by a grant to David W. Denning (The University of Manchester, The National Aspergillosis Centre, University Hospital of South Manchester, Manchester, UK) and NDR from the Global Action Fund for Fungal Infections (GAFFI).

**Disclosure:** J.M. Alshehri, None; D. Caballero-Lima, None; M.C. Hillarby, None; S.G. Shawcross, None; A. Brahma, None; F. Carley, None; N.D. Read, None; H. Radhakrishnan, None.