

Research Diary

Innovations - Q3

Lounging @IITHHostels, One Space - Many Experiences

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The objective of this design studio is to reimagine/ reinterpret an existing place. Idea was to imagine what accordances are possible in the place.

Highlights:

- Recreation of the existing place.
- IITH's POD was chosen as a case study.
- Multipurpose furniture is created.
- The purpose was to create a bond among POD members to psychological positivity.

View Video Abstract:

<https://youtu.be/NbGOgYy3Y7E>

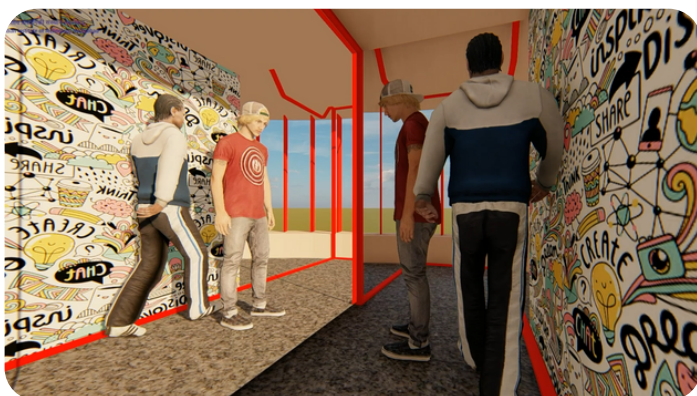


Fig. 13: Snapshots from Design Studio

A strategy to save vision using DCM Hydrogel

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This technology offers a minimally invasive procedure to prevent scarring following corneal injury and also a new treatment strategy to cure the existing blinding scar for which the currently available option is corneal transplantation. Also, a human-sized cornea has been fabricated by Bioprinting technology towards the development of artificial cornea for transplantation.

Highlights:

- This technology was developed using discarded cornea from slaughterhouses and disqualified cornea for transplantation from Eye banks. The processing method is simple and using only eco-friendly and harmless chemicals.
- Preclinical studies indicate that the corneal scar for which cadaveric corneal grafting is the only available option currently, can be cured using this hydrogel.
- Introduced, for the first time, a preventive measure using this hydrogel for corneal scarring following traumatic corneal injuries.

Read More: <https://tinyurl.com/36bb9y59>

View Video Abstract:

<https://youtu.be/SrK6UvSpfyk>

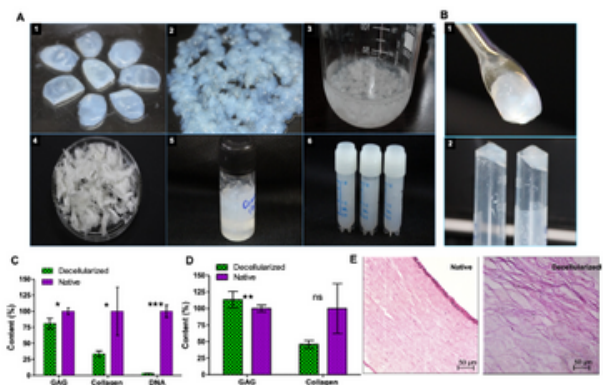


Figure 1. Preparation, decellularization, and biochemical characterization of dCMH. (A1) bovine cornea, (A2) minced cornea, (A3) decellularization process, (A4) after lyophilization, (A5) DCM solution preparation, (A6) prepared DCM solution, (B) Gelation after pH adjustment and incubation at 37 °C for 45 min, (B1) Physical properties of dCMH after cross-linking that attained scoopability, (B2) Image depicting the nonfloating behavior of dCMH after cross-linking (C) Retained ECM components and DNA after tissue normalization, (D) Retained GAG and collagen before weight normalization of native and decellularized corneal tissues, (E) H&E staining of native and decellularized corneal tissues.

Fig. 14: Working Schematic of DSM Hydrogel