

Report on travel grant no. 3887 of the Max Buchner Research Foundation

„ Development of Polyacrylamide Hydrogel as a Novel Cell Sheet Fabrication Platform Exhibiting Physiological Stiffness “

*7th TERMIS World Congress 2024, 25-28 June 2024, Seattle Washington
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7th TERMIS WC 2024 (June 25-28, Seattle) is the largest meeting in the field of tissue engineering and regenerative medicine. Herein, I presented my research on a novel cell sheet fabrication platform with physiological stiffness. I functionalized the hydrogel platform with biotin that binds to streptavidin. This setup allows for cell attachment and growth via low-binding biotin modified with cell-binding peptide. Monolayer cells can be detached as a sheet by exposure to 20 mM excess biotin. This platform will be applied for cartilage tissue.

From TERMIS sessions, I gained key insights:

1. Automation in tissue engineering is growing.
2. Regenerative medicine strategies now consider aging and immune responses.
3. Induced pluripotent stem cells differentiate into cartilage without becoming bone tissue, crucial for my cartilage tissue engineering interest.

Notable lectures included:

- Prof. Buddy R. (Washington Uni.) critiqued the incremental nature of current tissue engineering research, emphasizing its low societal impact and financial inefficiency.
- Prof. Shana O. K. discussed the BioHub in Chicago, funded by the Chan Zuckerberg Institute, which aims to understand the immune system beyond static snapshots.
- Prof. Gordana N. (Columbia Uni.) presented her award-winning work on complex lab-on-chip systems simulating multi-organ interactions and her innovative method to rehabilitate sub-optimal donor lungs using swine circulation, enhancing lung viability for transplantation.