

The 3R's of Tissue Restoration

Prof. Vignesh Muthuvijayan, IIT Madras, India

ABSTRACT

Tissues are lost and damaged every day for various reasons such as injuries, disease conditions, and congenital defects. This leads to poor quality of life and even death. Our lab aims to restore these damaged tissues. The three approaches that we use for this goal are Regenerate, Repair, and Replace. To achieve this goal, we use polymeric biomaterials. Specifically, our lab focuses on using various carbohydrate polymers for tissue restoration. Under the regeneration strategy, we work on engineering skin, bone, and cartilage. Our lab also works on developing controlled drug delivery systems for repairing diseased tissues. Recently, we have developed a novel injectable hydrogel to deliver antifibrotic drugs that can prevent fibrosis relapse. The final strategy for tissue restoration is replacing the damaged tissues. Our lab works on engineering polymer surfaces to improve biocompatibility. This talk will give an overview of various projects that are undertaken in our lab.

ABOUT THE SPEAKER

Dr. Vignesh Muthuvijayan is a Professor at the Department of Biotechnology, Bhupat and Jyoti Mehta School of Biosciences, IIT Madras. In addition, Prof. Vignesh Muthuvijayan is also serving as a Coordinator for the IIT Madras BS program in Data Science and Applications and the National Programme on Technology Enhanced Learning (NPTEL). He received his BTech in Chemical Engineering from A. C. Tech, Anna University, India. He pursued his master's degree in Chemical and Biochemical Engineering at the University of Maryland, Baltimore County, and his PhD in Chemical Engineering at Oklahoma State University. He also worked as a post-doc at Johns Hopkins University. His research interests are in the area of biomaterials and their applications. He has published more than 50 research articles in some of the top peer-reviewed journals in his field. He also has 5 patents and 8 book chapters to his credit. He has also won various awards including the Best Teacher Award for the year 2022 for excellence in teaching at the Department of Biotechnology, IIT Madras, the Keshav Ranganath Award for the year 2019 for guiding the best PhD thesis at IIT Madras, the Gandhian Young Technological Innovation (GYTI) Appreciation 2017, and the Young Faculty Recognition Award (YFRA) 2016 for his outstanding contributions to teaching and research at IIT Madras.



November 21, 2024, 5:00 pm, AR Auditorium, Mechanical Engineering, IISc