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Abstract

Maintaining Vascular Architecture: A Key Challenge In Creating A Bioartificial Kidney

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Abstract:

A fully functional bioartificial kidney would be an epic medical achievement that can address the growing need for renal transplantation. Various research efforts across the globe are focused on developing such a device. Decellularization technologies seem to be a promising approach. This technique removes the native cellular components from discarded human and intact pig organs and leaves behind and extracellular matrix scaffold of the original organ. These scaffolds can then be used as templates to generate bioartificial organs. Yet, the complexity of the renal structure and the present limited understanding of how best researchers can leverage decellularization technologies to support long-term transplantation emphasize how far away we are from achieving this goal. Further work is therefore needed to define ways to maintain vascular integrity post-transplantation. As a result, the objective of this research was to gain insight into the structural and functional changes that can occur in decellularized kidneys under typical in vivo conditions. This experimental model allowed us to simultaneously investigate the durability of decellularized vascular networks under conditions that correspond to normal and abnormal states known to accompany transplantation.

Biography:

Overall, Dr. Corridon is a medical biophysicist, inventor, and entrepreneur who possesses distinctive training in teaching and research. His expertise spans the fields of biomedicine, microvascular surgery, mathematics, physics, and engineering. His research focuses on microvascular remolding that supports tissue/organ regeneration and replacement, and the use of functional dynamic imaging to study these processes.

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