

THE BIOARTIFICIAL KIDNEY

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The currently available therapeutic options in advanced renal failure are hemodialysis and hemofiltration. However, though they replace the small solute clearance function of the glomerulus, they fall short of substituting the metabolic and endocrinologic functions of the tubular cells. Renal transplantation, the ideal renal replacement therapy, has the major limitation of adequate organ supply. Tissue engineering is a developing field where bioartificial organs are produced using cells seeded on hollow fibre bioreactors perfused in an extracorporeal circuit. The combination of a synthetic hemofiltration cartridge and a renal tubule cell assist device containing human cells in an extracorporeal circuit is capable of replacing the filtration, metabolic and endocrinologic functions of the failing kidneys.