

There is a crucial need for increases in resources and manpower in research in kidney disease. Probetex was founded as a **"Renal Research Resource Company"** to create a repository of "off the-shelf" tissue products to provide readily available samples and help investigators to quickly and efficiently explore their ideas on established and standardized models or identified cases of human disease. Part of this goal is to create a repository of kidney cell lines to supplement its portfolio of renal tissue products. Indeed, the isolation, cloning, maintenance, and characterization of renal progenitor cells is identified as a **research priority** in a Report of the Strategic Planning Conferences sponsored by the National Institute of Diabetes and Digestive and Kidney Diseases and the Council of American Kidney Societies. Included in these priorities are initiatives to 1) *develop new organotypic in vitro culture models* and 2) *develop conditions to permit commitment of stem cells into renal progenitors, and then the maintenance of these differentiated cell lines*. The basis of this Phase I application (in collaboration with the University of Texas Health Science Center at San Antonio) is to address the above priorities by defining growth and differentiation conditions for three existing kidney progenitor cell lines derived from mouse and rat embryonic primordia and to isolate and characterize new cell lines from developing embryonic kidney. Specific aims are: **Aim 1. To characterize the differentiation potential of embryonic metanephric mesenchymal (MM) and ureteric bud (UB) cell lines derived from kidney primordia.** Differentiation conditions include growth in co-culture, in specialized conditioned media, and after implantation of the cells individually and in combination in SCID mice. Expression analysis will be conducted using immunohistochemistry and RT-PCR to validate expanded set of expression markers for specific cell types and differentiation states of the cells. **Aim 2. To isolate and characterize new embryonic cell lines derived from the nephrogenic zone of embryonic metanephric kidney and characterize the cells using criteria as outlined above;** **Aims 3 and 4 are designed to establish an Embryonic Kidney Cell Bank and Commercialization Plan** for expansion of new cell lines, large-scale production protocols for kidney cell propagation, out-sourcing, and licensing with the intent to expand the scope of cell lines in the Probetex's repository that are available to the company's investigator/ customers.