Role of the podocyte in glomerular injury

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INTRODUCTION: Appreciation of the important role of the glomerular epithelial cell or podocyte in glomerular physiology and pathology has accelerated in recent years because of advances in two areas. First, detailed study of a number of rare syndromes of early-onset nephrotic syndrome has led to the identification of key genes whose protein products are specifically expressed by the podocyte and whose mutation leads to disruption of control of glomerular permeability. Second, improvements in cell culture technology have allowed propagation of differentiated podocytes in vitro, so that these complex cells can be studied in greater detail in the laboratory. The purposes of this review are to highlight these recent advances and focus attention on the podocyte as a key cell in the normal function of the glomerulus, to consider ways in which disruption of podocytes can result in kidney disease, and to suggest the importance of the podocyte as a target for therapy. (Hong Kong J Nephrol 2001;3(2):51-56)