

BACKGROUND

Plasma ultrafiltration during a primary urine formation in the glomerulus is a central function of the kidneys. This process is associated with the anatomical region of the kidney, which is composed of a basement membrane with highly specialized epithelial cells called podocytes. As a part of the glomerular filtration barrier, the slit diaphragm (SD) is thought to function as a filter that is size-selective. In the nephrotic syndrome, the normal podocyte substructure is lost; the effacement of podocyte foot processes results in a massive proteinuria. NPHS2 was identified by positional cloning to be the target gene of autosomal recessive steroid-resistant nephrotic syndrome, which is characterized by early childhood onset of proteinuria, rapid progression to end-stage renal disease and focal segmental glomerulosclerosis.¹ NPHS2 encodes for Podocin, a protein exclusively expressed in podocytes of the developing and mature glomeruli. Podocin plays a critical role in the function of the glomerular filtration barrier. Podocin is a member of the stomatin protein family with a short N-terminal domain, a transmembrane region, and a cytosolic C-terminal domain. Podocin is predicted to form a membrane-associated hairpin-like structure with a cytosolic N- and C-terminal domain that is typical for stomatin-like proteins and caveolins. In podocytes, Podocin localized at the insertion site of the SD complex in the podocyte foot processes. Furthermore, it is a constituent of detergent-insoluble microdomains and has been shown to interact with another raft-associated podocyte proteins, CD2-associated protein (CD2AP) and nephrin. Hence, Podocin may act as a scaffolding protein in the podocyte lipid rafts, recruiting nephrin and CD2AP to these microdomains. It is known that nephrin forms zipper-like interactions to maintain the structure of podocyte foot processes. Nephrin is a signaling molecule, which stimulates mitogen-activated protein kinases. Moreover, it was shown that nephrin-induced signaling is greatly enhanced by Podocin, which binds to the cytoplasmic tail of nephrin. Mutational analysis suggests that abnormal or inefficient signaling through the nephrin-Podocin complex contributes to the development of podocyte dysfunction and proteinuria.² In addition CIN85/Ruk_L may regulate interaction of CD2AP, nephrin and Podocin. Podocin endocytosis was mediated via CIN85/Ruk_L-mediated ubiquitination.³

References:

1. Boute, B. et al: Nature Genet. 24:349-54, 2000
2. Huber, T.B. et al: J. Biol. Chem. 276:41543-6, 2001
3. Tossidou, I. Et al: J. Biol. Chem. 285:25285-95, 2010

TECHNICAL INFORMATION

Source:

Podocin Antibody is a rabbit antibody raised against a short peptide from human Podocin sequence.

Specificity and Sensitivity:

This antibody detects endogenous levels of Podocin proteins without cross-reactivity with other related proteins.

Storage Buffer: PBS and 30% glycerol

Storage:

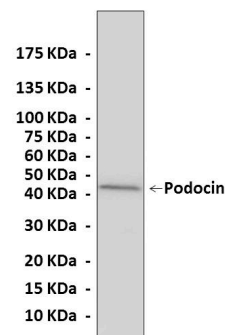
Store at -20°C for at least one year. Store at 4°C for frequent use. Avoid repeated freeze-thaw cycles.

APPLICATIONS

Application:	*Dilution:
WB	1:1000
IP	n/d
IHC	1:50-200
ICC	n/d
FACS	n/d

**Optimal dilutions must be determined by end user.*

QUALITY CONTROL DATA



Western Blot detection of Podocin proteins in rat kidney tissue lysate using Podocin Antibody.

