

신장 발세포에서 네프린과 액틴의 역할

순천향대학교 의과대학 내과학교실¹, 펜실베이니아 대학교 의과대학 신장내과²

전진석¹ · 로렌스 홀즈만²

Nephrin and Actin Dynamics in Podocyte

Jin Seok Jeon¹ and Lawrence B. Holzman²

Soon Chun Hyang University Hospital, Seoul Korea¹
University of Pennsylvania, USA²

Flattening of foot process is a characteristic histologic finding in most glomerular disease. Change of actin cytoskeleton is necessary for foot process effacement. Recently phosphorylation of nephrin has known to be required for actin reorganization in podocyte.

Epithelial cells are normally stationary and non-motile, however they become migratory during wound healing, tissue morphogenesis, and metastasis of epithelial tumors. Small GTPases, particularly members of the Rho family, are well-established regulators of cell migration. Recently another small GTPase, ARF6, has emerged as key regulator of cell movement. Arf6 also initiates remodeling of the cortical actin cytoskeleton. However, little known about how nephrin interact with small GTPase, Arf6 regulating actin dynamics in podocyte. We investigated whether Nephrin activation induces lamellipodia formation in cultured podocytes. Using a previously described cultured podocyte model of Nephrin activation (induced clustering of CD16/7-Nephrin chimeric protein), we observed that nephrin activation resulted in lamellipodia formation and increased Arf6 activity. In addition, Arf6 dominant negative mutant and siRNA significantly reduced nephrin induced lamellipodia formation

In conclusion, nephrin induces lamellipodia formation in podocyte through Arf6 activation.