

## DESCRIPTION

**Source** Human embryonic kidney cell, HEK293-derived human Kirrel1/NEPH1 protein  
Gln17-Leu493, with a C-terminal 6-His tag  
Accession # Q96J84

**N-terminal Sequence Analysis** Thr21

**Predicted Molecular Mass** 53 kDa

## SPECIFICATIONS

**SDS-PAGE** 65-75 kDa, under reducing conditions

**Activity** Measured by its binding ability in a functional ELISA.  
When Recombinant Human Kirrel1/NEPH1 His-tag (Catalog # 10165-K1) is immobilized at 2 µg/mL (100 µL/well), the concentration of [Recombinant Human Nephrin](#) (Catalog # 9399-NN) that produces 50% of the optimal binding response is 1-6 µg/mL.

**Endotoxin Level** <0.10 EU per 1 µg of the protein by the LAL method.

**Purity** >95%, by SDS-PAGE visualized with Silver Staining and quantitative densitometry by Coomassie® Blue Staining.

**Formulation** Lyophilized from a 0.2 µm filtered solution in PBS with Trehalose. See Certificate of Analysis for details.

## PREPARATION AND STORAGE

**Reconstitution** Reconstitute at 500 µg/mL in PBS.

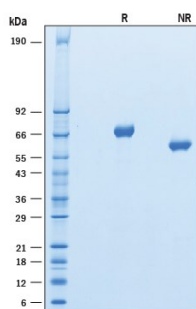
**Shipping** The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.

**Stability & Storage** **Use a manual defrost freezer and avoid repeated freeze-thaw cycles.**

- 12 months from date of receipt, -20 to -70 °C as supplied.
- 1 month, 2 to 8 °C under sterile conditions after reconstitution.
- 3 months, -20 to -70 °C under sterile conditions after reconstitution.

## DATA

### SDS-PAGE



2 µg/lane of Recombinant Human Kirrel1/NEPH1 His-tag (Catalog # 10165-K1) was resolved with SDS-PAGE under reducing (R) and non-reducing (NR) conditions and visualized by Coomassie® Blue staining, showing major bands at 65-75 kDa and 50-60 kDa, respectively.

**BACKGROUND**

Kirrel1, also called NEPH1, is a 90-110 kDa type I transmembrane glycoprotein that belongs to the NEPH family of the immunoglobulin superfamily (1-4). The 757 amino acid (aa) human Kirrel1 contains a 16 aa signal sequence, a 483 aa extracellular domain (ECD) with five C2-type Ig-like domains, a 21 aa transmembrane sequence and a 237 aa cytoplasmic domain. The ECD also contains a site for FGF/FGF R interaction, and an RGD site that may allow integrin-mediated cell attachment. Five IgG-like repeats characterize the extracellular domain (5). The interaction of these five IgG-like motifs with the eight IgG-like motifs in Nephtrin form a zipper-like meshwork around the glomerular capillaries in podocytes (5, 6). This interaction is what forms the structural basis of the slit diaphragm regulating macromolecule movement from the blood (5). Human Kirrel1 shares 98% aa identity with mouse and rat homologs, respectively, within the ECD. Kirrel1 expression has been mainly studied in the kidney glomerular slit diaphragm, but its expression with nephrin or other family members has also been reported in central nervous system neurons, pancreas and placenta (3, 4, 7-9). Kirrel1 forms cis hetero-oligomers with Nephtrin, which brings together signaling molecules that direct actin polymerization (3, 4, 10). This interaction is essential for barrier function in the slit diaphragm, and mice deleted for Kirrel1 die perinatally due to proteinuria and failure to thrive (2, 3).

**References:**

1. Sellin, L. *et al.* (2003) *FASEB J.* **17**:115.
2. Donoviel, D.B. *et al.* (2001) *Mol. Cell. Biol.* **21**:4829.
3. Liu, G. *et al.* (2003) *J. Clin. Invest.* **112**:209.
4. Barletta, G-M. *et al.* (2003) *J. Biol. Chem.* **278**:19266.
5. Martin, E. and Jones, N. (2018) *Front Endocrinol.* **9**:302.
6. Grahammer, F. *et al.* (2016) *JCI insight.* **1**: pii 86177.
7. Gerke, P. *et al.* (2006) *J. Comp. Neurol.* **498**:466.
8. Rinta-Valkama, J. *et al.* (2007) *Mol. Cell. Biochem.* **294**:117.
9. Beall, M.H. *et al.* (2005) *J. Soc. Gynecol. Investig.* **12**:298.
10. Garg, P. *et al.* (2007) *Mol. Cell. Biol.* **27**:8698.