SUPPLEMENTARY FIGURE LEGENDS

Supplementary Figure 1: Foxd1-stroma specific knockdown of *Klf15* in *Foxd1-Cre Klf15$^{fl/fl}$* mice was confirmed. (A) Confirmation of recombination by PCR of genomic DNA from total kidney cortex. **(B)** Primary fibroblasts were isolated from *Foxd1-Cre Klf15$^{fl/fl}$* and *Foxd1-Cre Klf15$^{+/+}$* mice and RNA was extracted for RT-PCR was performed for *Klf15* mRNA expression (n=6, *p<0.05, Mann-Whitney test). **(C)** Immunofluorescence staining for KLF15 and αSMA was performed in 12-week old *Foxd1-Cre Klf15$^{fl/fl}$* and *Foxd1-Cre Klf15$^{+/+}$* mice. Representative images from four mice in each group are shown in the left panel (X 20). Arrows show colocalization of KLF15 and αSMA in medium-sized artery. **(D)** Primary fibroblasts were isolated from *Foxd1-Cre Klf15$^{fl/fl}$* and *Foxd1-Cre Klf15$^{+/+}$* mice and RNA was extracted for RT-PCR was performed for *Ctgf, Col1α1, Fibronectin, and Vimentin* mRNA expression (n=6, *p<0.05, Mann-Whitney test).

Supplementary Figure 2: Increased in TGFβ signaling in *Foxd1-Cre Klf15$^{fl/fl}$* mice as compared to *Foxd1-Cre Klf15$^{+/+}$* mice. Age-matched 12-week-old *Foxd1-Cre Klf15$^{fl/fl}$* and *Foxd1-Cre Klf15$^{+/+}$* mice were concurrently treated with UUO or sham for 7 days. **(A)** RNA was extracted from total kidney cortex and RT-PCR was performed for *Ctgf* expression from 12-week-old *Foxd1-Cre Klf15$^{fl/fl}$* and *Foxd1-Cre Klf15$^{+/+}$* mice treated with sham or UUO for 7 days. (n=6, *p<0.05, ***p<0.001, Kruskal-Wallis test with Dunn's post-test). **(B-D)** Western blot was also performed on total kidney cortex for phospho-Smad2/3, total-Smad2/3, and GAPDH. Representative blots from three independent experiments are shown. Densitometry analysis was performed to quantify protein expression. (n=3, *p<0.05, **p<0.01, ***p<0.001, Kruskal-Wallis test with Dunn's post-test).

Supplementary Figure 3: Baseline measurements in Angiotensin II (AngII) treated mice. Age matched 12-week-old *Foxd1-Cre Klf15$^{+/+}$* and *Foxd1-Cre Klf15$^{fl/fl}$* mice were treated with subcutaneous continuous infusion of AngII or saline for 6 weeks. Subsequently **(A)** heart weight (g) and **(B)** kidney weight (g) with respect to body weight (g) were measured. **(C)** Systolic blood pressure was determined using tail-cuff manometry. (n=6, *p<0.05, **p<0.01, ***p<0.001, Kruskal-Wallis test with Dunn's post-test).

Supplementary Figure 4: Loss of *Klf15* in MEFs activates Wnt/β-catenin signaling. *Klf15* knockdown (*Klf15-shRNA*) in MEFs was performed using lentiviral shRNAmir system. *EV-shRNA* serves as the empty vector control. **(A)** Western blot was performed for KLF15 in *Klf15-shRNA* and *EV-shRNA* MEFs. Representative blots from three independent experiments are shown. **(B)** Wnt1 ligand was generated in the supernatant in HEK293 cells overexpressing Wnt1. Western blot was performed in supernatant in pNL-CMVWnt1IRESEGFP-WPREΔU3 and pNL-CMVIRESEGFP-WPREΔU3 in HEK293 cells. Subsequently, *Klf15-shRNA* and *EV-shRNA* MEFs were grown to 80% confluency and treated with Wnt1 ligand at 0.25, 0.5, 1.0 μg/ml for 48 hours. **(C)** Western blot for phospho-β-catenin, total-β-catenin, c-Myc, and GAPDH were performed. Representative blots from three independent experiments are shown. (Right panel) Densitometry analysis was performed to quantify protein expression. (n=3, *p<0.05 to dose-matched *EV-shRNA*, two-way ANOVA with Tukey's post-test).

Supplementary Table 1: Promoter analysis of KLF15 binding sites

Name	P-value	Z-score	Genes
Wnt Signaling Pathway Netpath(Homo sapiens)	0.002	-2.032	GSK3B; TCF7L2; CTBP1; LEF1; NFATC2; CSNK1D; TSC1; ARRB2; MAPK9; CDK6; AKT1; CTNNB1; PPARG; TCF4
PodNet: protein-protein interactions in the podocyte (Mus musculus)	0.006	-2.159	DDR1; LDB1; ILK; ARRB2; LAMC1; RBPJ; CMIP; PPP3CA; CAPZB; AKT1; STRA13; PRKACA; SPTAN1; RALGPS1; PAX2; ENAH; INF2; PARD3; KCNMA1; BIRC5; PICK1; LMX1B; PLA2R1; DBN1; CAMK2B; CD151; SHC1; PXN; TENC1; CBL; CXXC5; APH1B; CSK; FYN; MYH10; FKTN; SMAD2; RAB4A; TGFB2; EGLN2; SMURF1; NFATC3; NR2F2; BAIAP2; SMAD7; CXCL12; NPHS1; WT1; CTNNB1; BCAR1; LIMS2; LIMS1
Wnt Signaling Pathway NetPath (Mus musculus)	0.038	-1.855	CAMK2B;GSK3B;CTBP1;FZD4;CTNNBIP1;LEF1;CSNK1D;ARRB2;SENP2;PAX2;MAPK9;SALL1;AKT1;CTNNB1;PIN1;TCF4;MARK2;ANKRD6
Deactivation of the beta-catenin transactivating complex	0.031	-2.118	TCF7L2; CTBP1; CTNNBIP1; LEF1; TCF7; AKT1; CTNNB1; MEN1
Repression of WNT target genes	0.012	-1.975	TCF7L2; CTBP1; LEF1; TCF7; CTNNB1; AES

WikiPathways 2016 gene-set library
*** less than overlap of 5 genes**
p < 0.05 (Fischer exact test)
Z-score- assess deviation from the expected rank

Supplementary Table 2: Primer Sequences for Real-Time PCR

Gene	Forward primer	Reverse primer
Mouse *Klf15*	AGAGCAGCCACCTCAAGGCCCA	TCACACCCGAGTGAGATCGCCGGT
Mouse *Col1α1*	GCTCTTTTTAGATACTGTGGTGAGGAA	GTTTCCACGTCTCACCATTG
Mouse *Vimentin*	GGATCAGCTCACCAACGACA	GGTCAAGACGTGCCAGAGAA
Mouse *Fibronectin*	ATGGTACAGCTGATCCTGCC	GCCCTGGTTTGTACCTGCTA
Mouse *c-Myc*	GAGCTCCTCGAGCTGTTTGA	GCATCGTCGTGGCTGTCT
Mouse *Ctgf*	CTGACCTGGAGGAAAACATTA	TTAGCCCTGTATGTCTTCACAC