

Supplementary material

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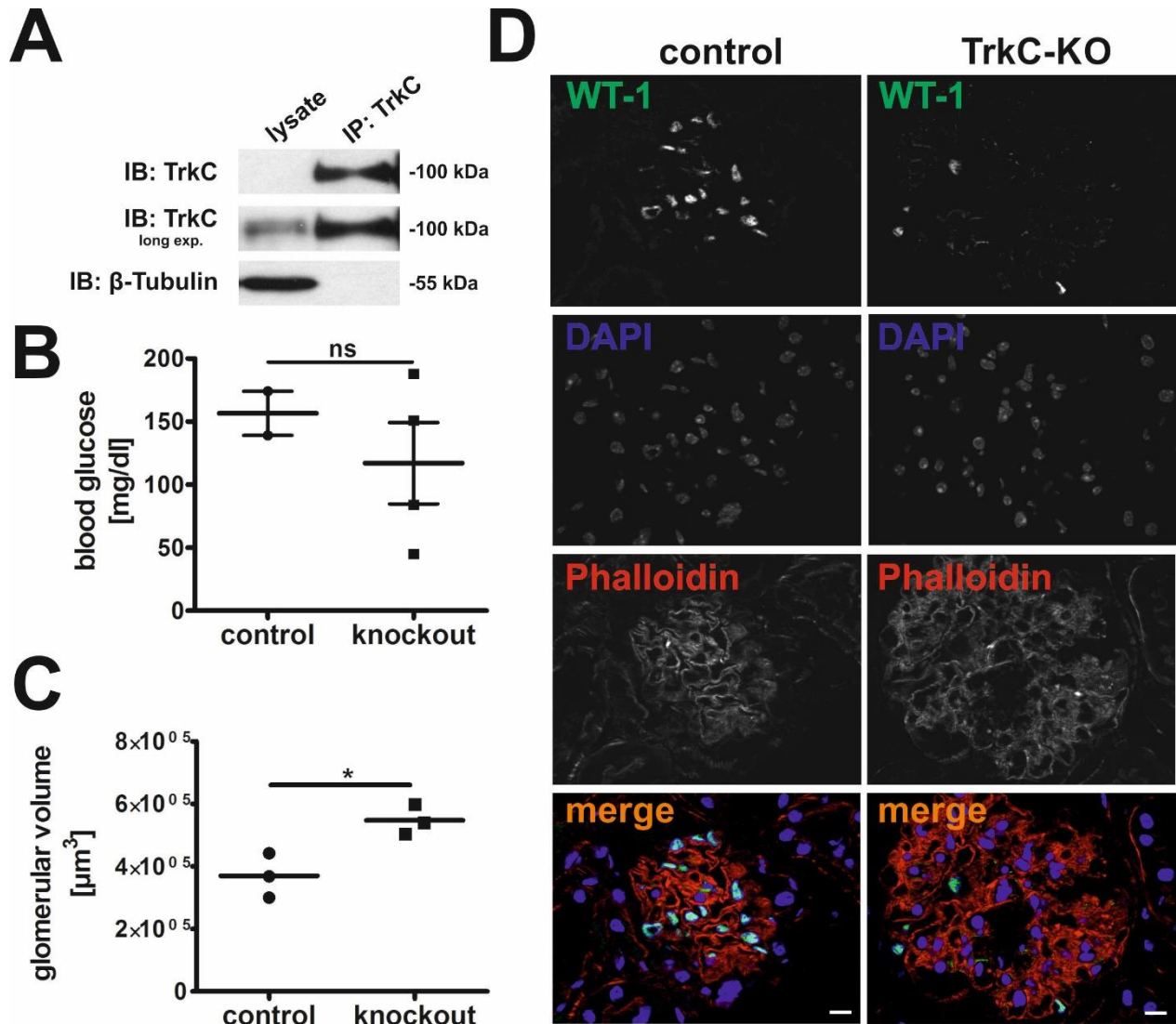
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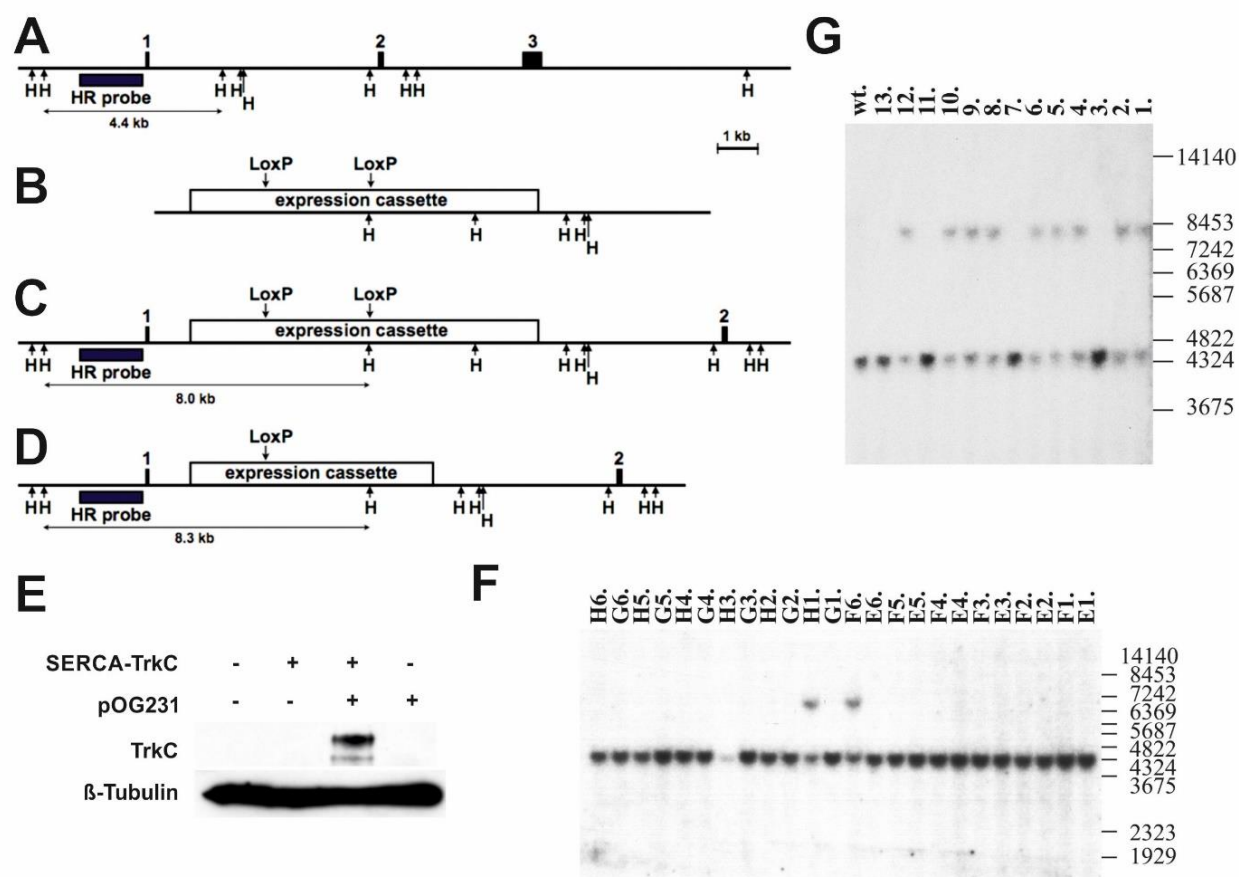
Supplemental figures



Supp. Figure 1. TrkC knockout in the nephron results in podocyte loss.

(A) Immunoblot with antibodies specific for TrkC or β -Tubulin of mouse glomerular lysate (lysate) or lysate that was immunoprecipitated with anti-TrkC antibodies (IP: TrkC). n=3. (B) Blood glucose levels of 5 months old control and *TrkC-KO* mice. Absolute values with SEM are shown in mg/dl. n=2-4. ns: not significant. (C) The glomerular volume of 15 months old control and nephron-specific TrkC knockout mice (*TrkC-KO*) was calculated using a single histological kidney section

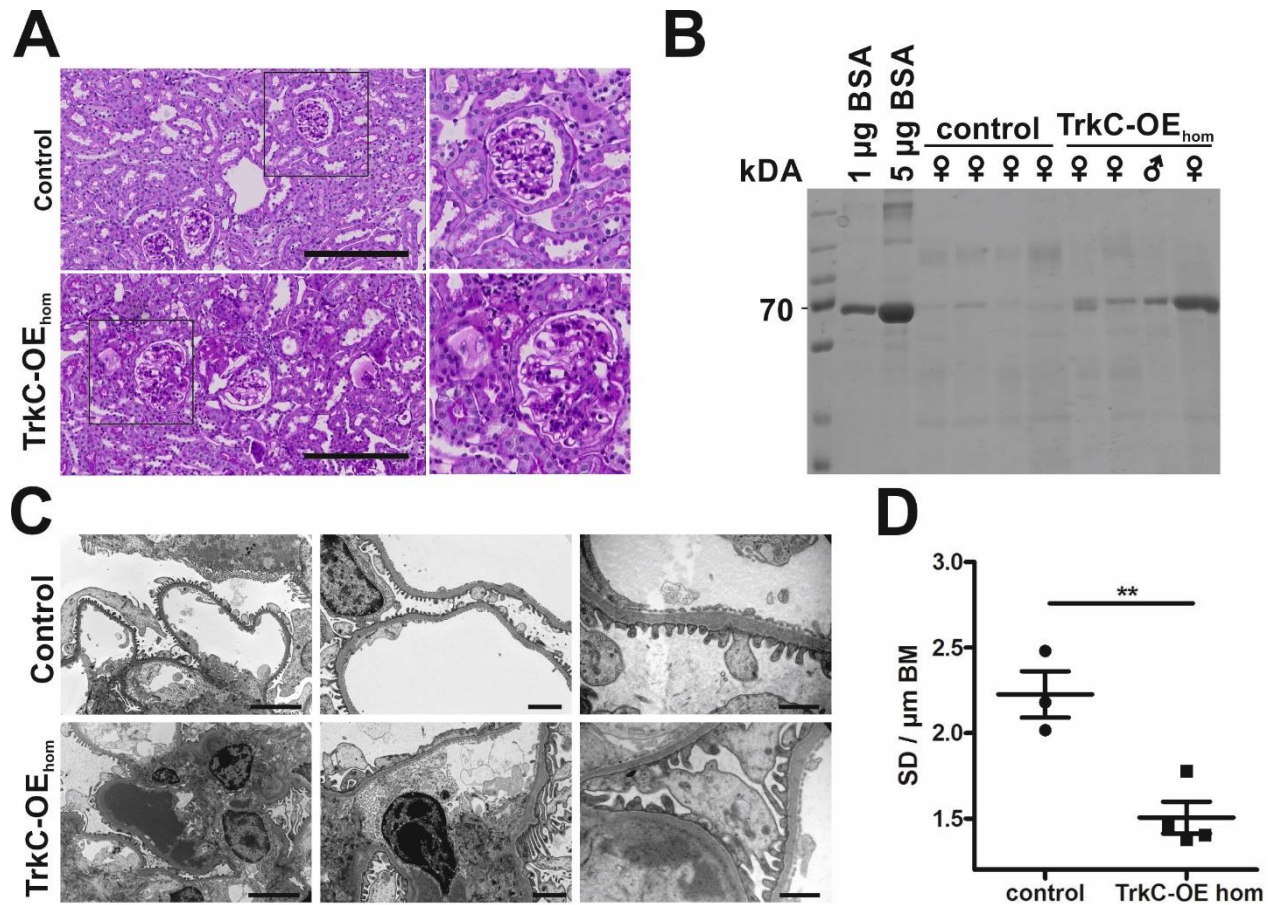
method. Absolute values with SEM are shown in μm^3 . * $P < .05$ by unpaired two-tailed Student's t -test. $n=3$. (D) Immunofluorescence analysis of kidney sections of 15 months old control and *TrkC-KO* mice stained with antibody specific for WT-1 (green). Phalloidin was employed to visualize the actin cytoskeleton (red) and DAPI for nuclei (blue). Scale bar: 10 μm . $n=3$.



Supp. Figure 2. Generation of transgenic TrkC mice for tissue-specific overexpression.

(A-D) Gt(ROSA)26Sor lncRNA gene with knock-in of the hTrkc_stop_flox_GFP expression cassette. The intronic and intergenic regions are shown as line, exons of the lncRNA gene are shown as filled boxes. The empty box corresponds to the hTrkc_stop_flox_GFP expression cassette together with the neomycin resistance/STOP sequences flanked by the LoxP sites. Exon numeration is shown above. The arrows above correspond to the LoxP sequences. Arrows below correspond to the restriction endonuclease site *HindIII* (H). Black boxes correspond to the Southern probe sequence (HR probe). The expected size of restriction DNA fragments are labeled below. (A) Wild type locus. (B) Targeting vector structure (without plasmid backbone). (C) Genomic locus after the homologous recombination. The hTrkc_stop_flox_GFP expression cassette together with the neomycin resistance/STOP sequences flanked by the LoxP sites is

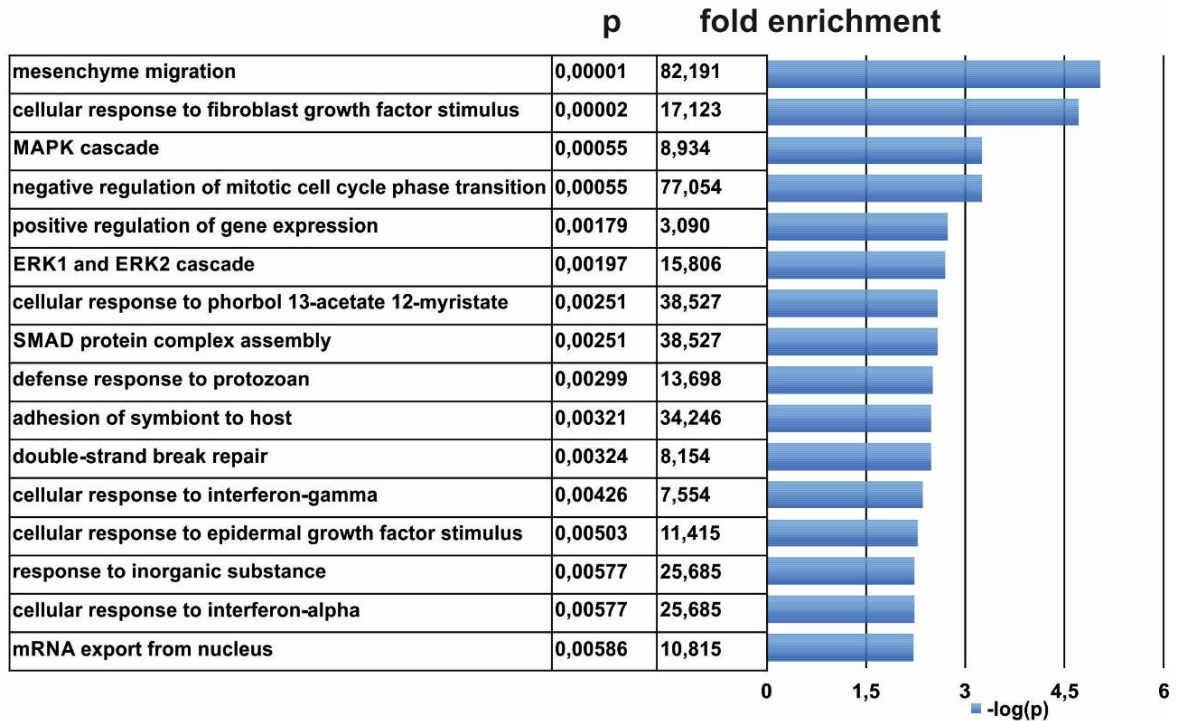
present in intron 1. (D) The neomycin resistance/STOP sequences are removed by crossing with Cre-recombinase expressing mice. (E) Immunoblot with antibodies specific for TrkC and β -Tubulin with lysates of HEK293T cells transfected with the SERCA TrkC plasmid and pOG231 which induces Cre expression. (F) Southern blot analysis of DNA isolated from ES cells. The wild-type allele produces a 4390 bp DNA fragment following digestion with *HindIII* while the targeted allele shows a 7951 bp fragment after insertion of the expression cassette hTrkc_stop_flox_GFP in the ROSA26. The size of the DNA fragments is labeled on the right. (G) Southern blot analysis of tail biopsy DNA from F1 mice with knock-in of the hTrkc_stop_flox_GFP expression cassette (1, 2, 4-6, 8-10, 12) and control littermates (3, 7, 11, 13).



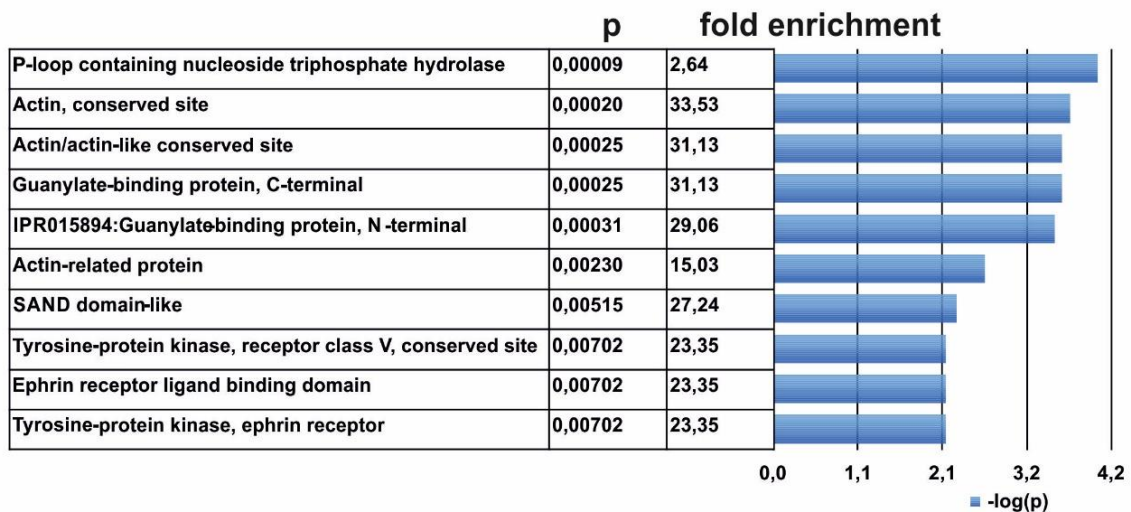
Supp. Figure 3. Homozygous mice with TrkC overexpression in the nephron develop albuminuria earlier than heterozygous mice.

(A) PAS staining of kidney sections of 15 months old control and homozygous nephron-specific TrkC overexpressing mice (*TrkC-OE_{hom}*). Scale bar left column: 200 μ m. Detail in the right column 200 μ m. (B) SDS-PAGE analysis of 5 μ l urine of representative 9 months old control and *TrkC-OE_{hom}* mice. 1 and 5 μ g bovine serum albumin (BSA) were loaded as controls. (C) Transmission electron microscopic analysis of 12 months old representative control and *TrkC-OE_{hom}* mice. Scale bars: 5 μ m (left column), 2 μ m (middle column), 1 μ m (right column). (D) Quantification of slit-diaphragms per μ m basement membrane. Shown are means and SEM. $n=3$. ** $P < .01$ by unpaired two-tailed Student's t -test.

A

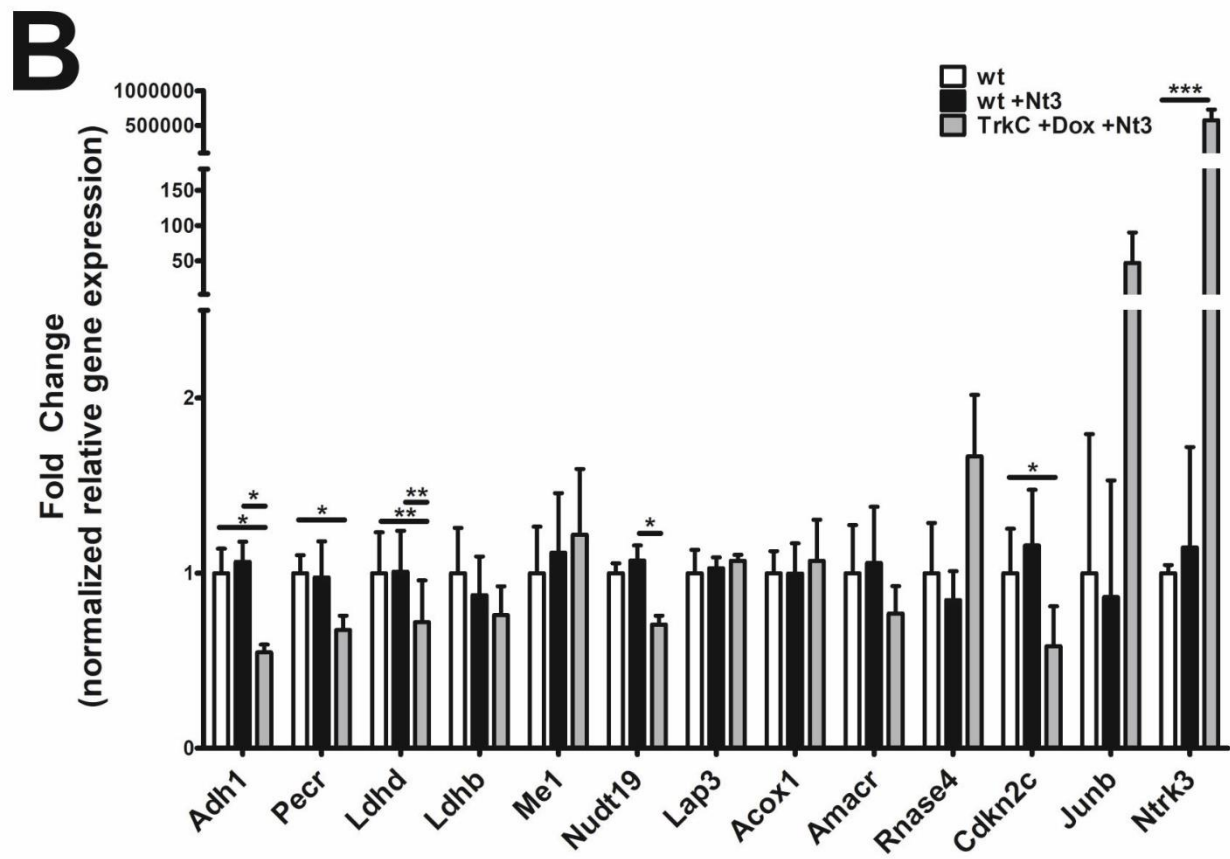
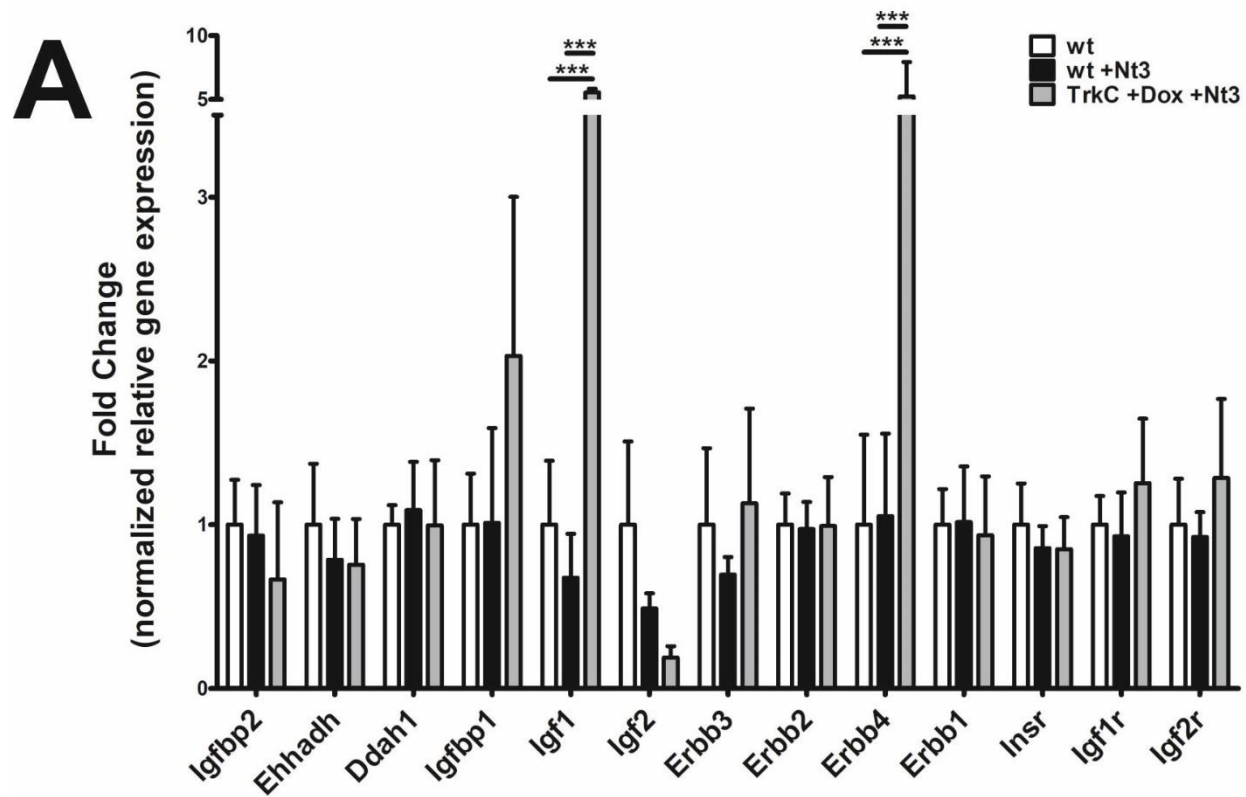


B



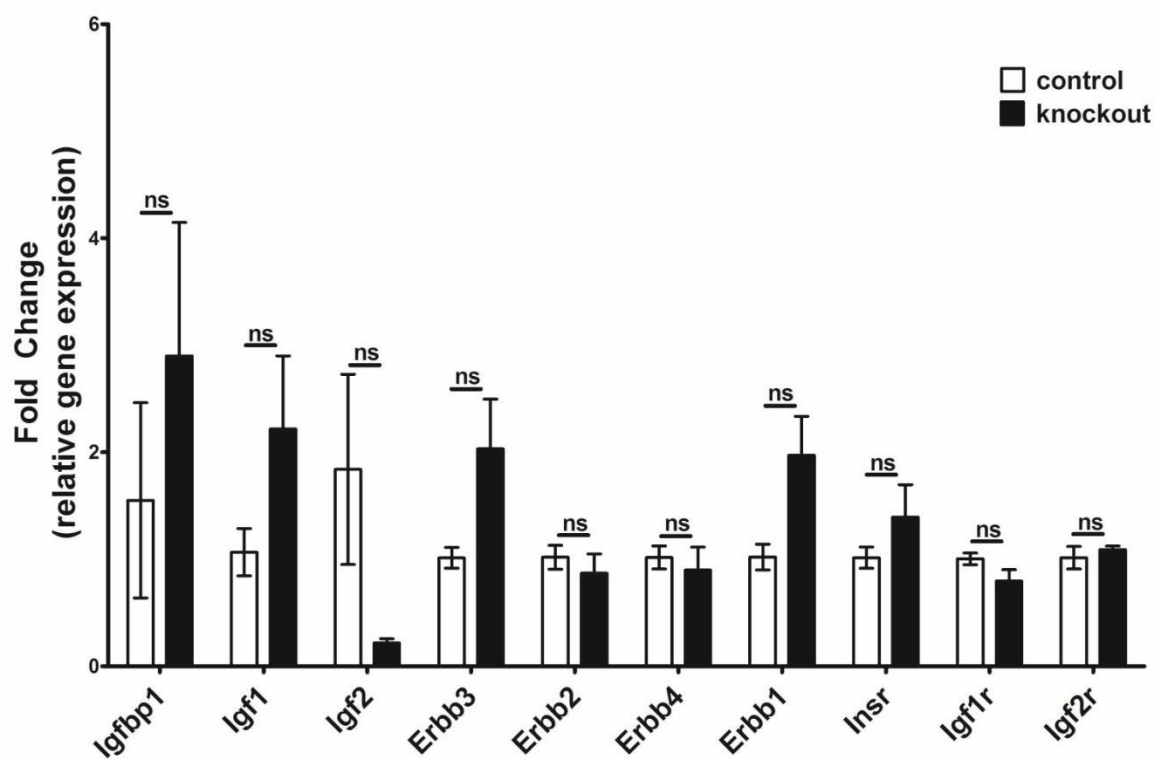
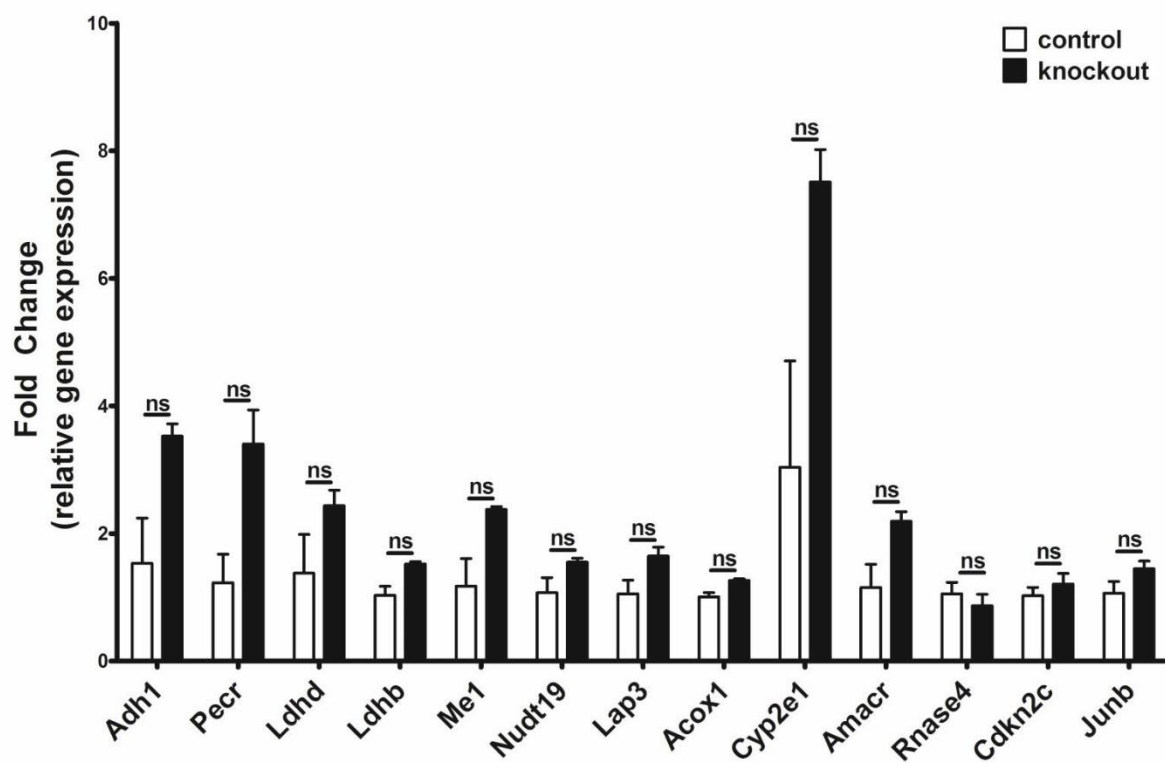
Supp. Figure 4. Overrepresented biological processes and protein domains following neurotrophin-3 treatment of cultured podocytes.

Analysis of over-represented phospho-proteins in (A) biological processes and (B) protein domains identified in the dox + Nt3-60' treated group in distinction to the control and dox groups. Shown are p-values and fold enrichment (logarithmic scale).



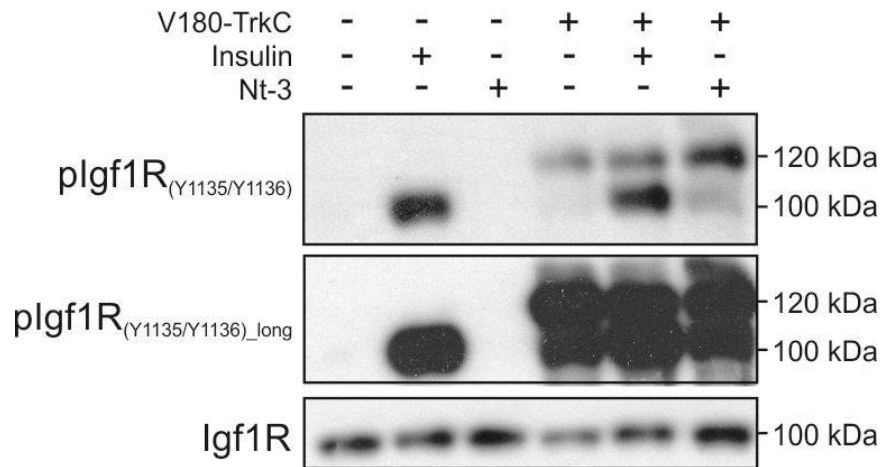
Supp. Figure 5. Regulated gene expression following TrkC activation in cultured podocytes.

(A and B) Quantitative PCR of lysates of wild-type podocytes (wt), wild-type podocytes treated with Nt-3 (wt + Nt-3), or podocytes inducibly overexpressing TrkC following doxycycline incubation that were treated with Nt-3 (TrkC + Dox + Nt-3). Relative gene expressions are shown as means and SEM. n=3. By two-way ANOVA with Bonferroni post hoc analysis. *p<0.05, **p<0.01, ***p<0.001. Insulin-like-growth factor binding protein 2 (Igfbp2); enoyl-Coenzyme A, hydratase/3-hydroxyacyl Coenzyme A dehydrogenase (Ehhadh); dimethylarginine dimethylaminohydrolase 1 (Ddah1); insulin-like-growth factor binding protein 1 (Igfbp1); insulin-like growth factor 1 (Igf1); insulin-like growth factor 2 (Igf2); epidermal growth factor receptor (ErbB1); erb-b2 receptor tyrosine kinase 2 (ErbB2); erb-b2 receptor tyrosine kinase 3 (ErbB3); erb-b2 receptor tyrosine kinase 4 (ErbB4); insulin receptor (Insr); insulin-like growth factor 1 receptor (Igf1r); insulin-like growth factor 2 receptor (Igf2r); alcohol dehydrogenase 1 (Adh1); peroxisomal trans-2-enoyl-CoA reductase (Pecr); lactate dehydrogenase D (Ldhd); lactate dehydrogenase B (Ldhb); malic enzyme 1 (Me1); nudix (nucleoside diphosphate linked moiety X)-type motif 19 (Nudt19); leucine aminopeptidase 3 (Lap3); acyl-Coenzyme A oxidase 1 (Acox1); alpha-methylacyl-CoA racemase (Amacr); ribonuclease, RNase A family 4 (Rnase4); cyclin dependent kinase inhibitor 2C (Cdkn2c); jun B proto-oncogene (Junb); neurotrophic tyrosine kinase, receptor, type 3 (Ntrk3, gene encoding TrkC).

A**B**

Supp. Figure 6. Additional data: Expression of genes regulating metabolic processes in nephron-specific TrkC knockout mice.

(A and B) Quantitative PCR of glomerular lysates of 5 months old control and nephron-specific TrkC knockout mice (*TrkC-KO*). Relative gene expressions are shown as means and SEM. n=4. By unpaired two-tailed student's *t*-test. ns: not significant. Insulin-like-growth factor binding protein 1 (*Igfbp1*); insulin-like growth factor 1 (*Igf1*); insulin-like growth factor 2 (*Igf2*); epidermal growth factor receptor (*ErbB1*); erb-b2 receptor tyrosine kinase 2 (*ErbB2*); erb-b2 receptor tyrosine kinase 3 (*ErbB3*); erb-b2 receptor tyrosine kinase 4 (*ErbB4*); insulin receptor (*Insr*); insulin-like growth factor 1 receptor (*Igf1r*); insulin-like growth factor 2 receptor (*Igf2r*); alcohol dehydrogenase 1 (*Adh1*); peroxisomal trans-2-enoyl-CoA reductase (*Pecr*); lactate dehydrogenase D (*Ldhd*); lactate dehydrogenase B (*Ldhb*); malic enzyme 1 (*Me1*); nudix (nucleoside diphosphate linked moiety X)-type motif 19 (*Nudt19*); leucine aminopeptidase 3 (*Lap3*); acyl-Coenzyme A oxidase 1 (*Acox1*); cytochrome P450, family 2, subfamily e, polypeptide 1 (*Cyp2e1*); alpha-methylacyl-CoA racemase (*Amacr*); ribonuclease, RNase A family 4 (*Rnase4*); cyclin dependent kinase inhibitor 2C (*Cdkn2c*); jun B proto-oncogene (*Junb*).



Supp. Figure 7. Nt-3 does not induce phosphorylation of the Igf1R on activating tyrosine residues in HEK293T cells which do not express TrkC.

Immunoblot analysis of wild-type HEK293T cell lysates or lysates of HEK293T cells transfected with V180-TrkC. HEK293T cells were incubated either with insulin or the TrkC ligand neurotrophin-3 (Nt-3) for 10 minutes. Immunoblots were performed with antibodies specific for insulin growth factor 1 receptor (Igf1R) and pIgf1R Y1135/Y1136. 'Long' indicates the exposure time. One representative experiment is shown, n=3.

Supp. Table 1. List of primers used for rt-PCR analysis.

Gene	Fwd	Rev
Aass	TGACAATTTGCCAGCACAGC	TAATCACTGCGTCTCGCACC
Acox1	ATCATGTGGTTTAAAACTCTGTGC	CGTGATCTCCAGATTCCAGGC
Adh1	AGGCATTGTTGAGAGCGTTG	AGGCATTAGCAGATCGCTTCG
Amacr	GCTCCACGGGCGAGAATTT	AGTTTCTCCATGACACCGCA
Aqp2	CACCGGTGCTCCATGAATCC	TCCGCCTCCAGGCCCTTGAGC
Cdkn2c	TCAGCATCCAGCCAGCG	TTAGGGTCCCTTGTTACAGT
Cyp2e1	GCAGTCCGAGACAGGATGAATA	CAACTGTACCCTGGGGATGAC
Ddah1	CTCATCACCCGCCCG	TCTCTGCCTGTGAATAGGACG
Ehhadh	TGCCATCAGTCCAAGTGAATCA	GCCAGTGGGAGATTAAAGCCA
ENaC	GATTGGATCTTCGAGATGCTGTC	CCCAGGTTGGACAGGAGGCTGAC
Erb1b1	GTACCTATGGATGTGCTGGGC	CGTCTTCGCATGAATAGGCCA
Erb1b2	TGCCCTACAACCTACCTCTCC	CCATGCCAGACCATAGCAT
Erb1b3	GCCTCTACAATCGGGCTTC	GTCCAGTTCAGAGAGTGGTGG
Erb1b4	CCACAACACGCTAGAACTCC	AGCTCTGTCTCCAGGAATCTC
Gapdh	CCTGGAGAACTGCCAAGTA	AAGTCGAGGAGACAACCTG
Gapdh	TGGCCTTCCGTGTTCTACC	GGTCTCAGTGTAGCCCAAGATG
Glut2	GTGCTGCTGGATAAATTCGCC	ATTGCAGACCCAGTTGCTGA
Igf1	GGCATTGTGGATGAGTGTTC	CGATAGGGACGGGGACTTCT
Igf2	GTCGCACATTCGGCCTCT	GGATCCCCATTGGTACCTGG
Igf1bp1	ACCTCAAGAAATGGAAGGAGCC	CACACTGTTTGCTGTGATAAAATCC
Igf1bp2	CGGCGTCTACATCCCGC	ATCACTGTCTGCAACCTGCT
Igf1r	CACAACACTGCTCCAAAGACAA	CAGCTTCAGTTTTAGGGCAAGC
Igf2r	CTTGGGTGTGGTGCAGATCA	GAACATAGGTGAGCCCGACG
Insr	CGAGGACAGTAGGCCATCC	ACTTCTCAAATGGCCTGTGC
Junb	CCGGATGTGCACGAAAATGG	GATAGGGATCCGCCAGGTTG
Lap3	CATGACGAAGGGCCTTGTTT	TGCTTTGAGAGGAGGTCCAG
Ldhd	GTGTCTACCATGGTGAAGGGAA	GTGTCCGCACTCTCCTGAG
Ldhd	AACTCACAGGAGCCATCGTT	CATGTCCACCGAGTGCC
Me1	GCATCTCAACAAGGACTTGGC	GTCGAAGTCAGAGTTCAGTCGT
Nphs1	TATCGCCAAGCCTTCACAGG	AGCTCAAAGGGCAGAGAACC
Nkcc2	GGTGCCAACATCTCTGGAGAC	GCAGACCCATTGCAATTCATCCC
Ntrk3 mouse	GCCACCGTGAAGAAATTTGGAG	AAGGAGACGCTGACTTGAGC
Ntrk3 rat	GAACAGCAATGGGAACGCC	TCTTGATGGTCAGCTTCTGGAG
Nudt19	TGAGAAGACTTGAAAATTTGCCT	ACATACAGCTCATCTCCTGGG
Pecr	GTAACGTGGTCATTGCTTCCC	TGACCAGATTACTCACCTCTTCTT
Rnase4	GCCAGGCAACGCCGA	TCATTACCTAGAAAGTGCCTGGAC
Sgt2	CAGGCTCTGAACTGGGGAG	GAACAGAGAGGCTCCAACCG
Slc27a2	GTTGGAGATACTTCCGGTGGA	GAGGGAGGCCATCCCAATTC

Supp. Table 2. List of unique phospho-proteins identified in the group treated with Nt-3 for 10 minutes.

Proteins	Protein names	Gene names
Q9Z0H7	B-cell lymphoma/leukemia 10	Bcl10
Q80UY1	UPF0586 protein C9orf41 homolog	Carnmt1
Q9QWK4	CD5 antigen-like	Cd5l
Q91WZ8	Dysbindin	Dtnbp1
O35601	FYN-binding protein	Fyb (Fyb1)
Q920G9	Germ cell-less protein-like 1	Gmcl1
Q9CWW1	DNA helicase MCM8	Mcm8
Q9D071	MMS19 nucleotide excision repair protein homolog	Mms19
O08750	Nuclear factor interleukin-3-regulated protein	Nfil3
Q8BMC4	Nucleolar protein 9	Nop9
Q80YV4	4'-phosphopantetheine phosphatase	Pank4
Q3TWL2	Type 1 phosphatidylinositol 4,5-bisphosphate 4-phosphatase	Tmem55b (Pip4p1)
F6S200	Pleckstrin homology domain-containing, family G (with RhoGef domain) member 1	Plekhg1
P0C090	Roquin-2	Rc3h2
Q9WUH7	Semaphorin-4G	Sema4g
Q8VD33	Small glutamine-rich tetratricopeptide repeat-containing protein beta	Sgtb
Q9WV80	Sorting nexin-1	Snx1
E9QAP7	TATA-box-binding protein-associated factor 4	Taf4a
Q9JJX7	Tyrosyl-DNA phosphodiesterase 2	Tdp2
Q923W1	Trimethylguanosine synthase	Tgs1
Q3UHC0	Trinucleotide repeat-containing gene 6C protein	Tnrc6c

Supp. Table 3. List of unique phospho-proteins identified in both Nt-3 treated groups.

Proteins	Protein names	Gene names
G3X8U3	Queuosine salvage protein	2210016F16Rik
Q91X20	Set1/Ash2 histone methyltransferase complex subunit ASH2	Ash2l
Q6X1Y6	Acid-sensing ion channel 3	Asic3
Q6PGH2;Q6UY53	Hematological and neurological expressed 1-like protein	Hn1l;AY358078
Q9D920	BLOC-1-related complex subunit 5	Borcs5
Q6DFW0	Guanine nucleotide exchange C9orf72 homolog	C9orf72
Q3TTA7	E3 ubiquitin-protein ligase CBL-B	Cblb
J3QPZ5	Cilia- and flagella-associated protein 73	Ccdc42b (Cfap73)
Q61655;Q9QY15; Q8BZY3	ATP-dependent RNA helicase DDX19A;ATP-dependent RNA helicase DDX25	Ddx19a;Ddx25; Ddx19b
Q9Z1T5	Deformed epidermal autoregulatory factor 1 homolog	Deaf1
Q9QYI5	DnaJ homolog subfamily B member 2	Dnajb2
Q6X7S9	EP300-interacting inhibitor of differentiation 2	Eid2
Q9CZX9	ER membrane protein complex subunit 4	Emc4
Q8CBF3	Ephrin type-B receptor 1	Ephb1
P81069	GA-binding protein subunit beta-2	Gabpb2
Q64737	Trifunctional purine biosynthetic protein adenosine-3;Phosphoribosylamine--glycine ligase;Phosphoribosylformylglycinamide cyclo-ligase;Phosphoribosylglycinamide formyltransferase	Gart
Q8CHG3	GRIP and coiled-coil domain-containing protein 2	Gcc2
A0A087WNP5	Predicted gene 10778	Gm4767 (Gm10778)
E9Q548;P98154	Integral membrane protein DGCR2/IDD	Gm20518;Dgcr2
Q8BXL9	Intermediate filament family orphan 1	Iffo1
P47877	Insulin-like growth factor-binding protein 2	Igfbp2
Q6ZPV2	DNA helicase INO80	Ino80
Q6P1C6	Leucine-rich repeats and immunoglobulin-like domains protein 3	Lrig3
Q7TSF4	Leucine-rich repeat-containing protein 75A	Lrrc75a
P31938;Q63932	Dual specificity mitogen-activated protein kinase kinase 1;Dual specificity mitogen-activated protein kinase kinase 2	Map2k1;Map2k2
Q91Y86	Mitogen-activated protein kinase 8	Mapk8
Q8VCF0	Mitochondrial antiviral-signaling protein	Mavs
Q8BVH9	tRNA N(3)-methylcytidine methyltransferase METTL6	Mettl6
Q99P21	A/G-specific adenine DNA glycosylase	Mutyh

Q66X01	NACHT, LRR and PYD domains-containing protein 9C	Nlrp9c
Q6VNS1	NT-3 growth factor receptor	Ntrk3
Q99LH2	Phosphatidylserine synthase 1	Ptdss1
P0C5E4	Phosphatidylinositol phosphatase PTPRQ	Ptprq
Q8R4E6	Purine-rich element-binding protein gamma	Purg
Q9JJC6	RILP-like protein 1	Rilpl1
Q9JJF3	Bifunctional lysine-specific demethylase and histidyl-hydroxylase NO66	Riox1 (No66)
Q5XPI3	E3 ubiquitin-protein ligase RNF123	Rnf123
Q99MV7	RING finger protein 17	Rnf17
D3Z0K6	Round spermatid basic protein 1-like	Rsb1l
Q91ZZ5	Relaxin receptor 2	Rxfp2
Q8CIF6	SID1 transmembrane family member 2	Sidt2
Q8BJM5	Zinc transporter 6	Slc30a6
Q812A2	SLIT-ROBO Rho GTPase-activating protein 3	Srgap3
Q70IV5	Synemin	Synm
O70472	Transmembrane protein 131	Tmem131
Q8BXN9	Transmembrane protein 87A	Tmem87a
Q3U0M1	Trafficking protein particle complex subunit 9	Trappc9
P62500	TSC22 domain family protein 1	Tsc22d1
P52623	Uridine-cytidine kinase 1	Uck1
Q3TLD5	Unconventional prefoldin RPB5 interactor	Uri1
Q14DI0	Predicted gene, 49359	Zfp935 (Gm49359)
Q91VN1	Zinc finger protein 24	Znf24

Supp. Table 4. List of unique phospho-proteins identified in the group treated with Nt-3 for 60 minutes.

Proteins	Protein names	Gene names
Q8BHE7	Uncharacterized protein	A630091E08Rik
P62737;P63268; P68033;P68134	Actin, aortic smooth muscle;Actin, gamma-enteric smooth muscle;Actin, alpha cardiac muscle 1;Actin, alpha skeletal muscle	Acta2;Actg2;Actc1; Acta1
Q80SW1	Putative adenosylhomocysteinase 2	Ahcyl1
Q9WTP6	Adenylate kinase 2, mitochondrial;Adenylate kinase 2, mitochondrial, N-terminally processed	Ak2
Q9CQM6	Ankyrin repeat domain-containing protein 61	Ankrd61
Q8C4V1	Rho GTPase-activating protein 24	Arhgap24
P59598	Putative Polycomb group protein ASXL1	Asxl1
Q9CPX6	Ubiquitin-like-conjugating enzyme ATG3	Atg3
P15920	V-type proton ATPase 116 kDa subunit a isoform 2	Atp6v0a2
O35185	Class E basic helix-loop-helix protein 40	Bhlhe40
Q91ZE9	Bcl-2-modifying factor	Bmf
Q8CFE5	BTB/POZ domain-containing protein 7	Btbd7
Q6ZQ38	Cullin-associated NEDD8-dissociated protein 1	Cand1
Q3UX62	Coiled-coil domain-containing protein 114	Ccdc114
Q3TVA9	Coiled-coil domain-containing protein 136	Ccdc136
Q8CDM4	Coiled-coil domain-containing protein 73	Ccdc73
Q8VC31	Coiled-coil domain-containing protein 9	Ccdc9
Q9D0M2	Cell division cycle-associated protein 7	Cdca7
P53569	CCAAT/enhancer-binding protein zeta	Cebpz
Q6IRU7	Centrosomal protein of 78 kDa	Cep78
Q8BGS7	Choline/ethanolaminephosphotransferase 1	Cept1
Q9D9G3	Cysteine-rich hydrophobic domain-containing protein 2	Chic2
Q9QZ15	C-type lectin domain family 4 member A	Clec4a
Q8BQ47	Protein canopy homolog 4	Cnpy4
P51642	Ciliary neurotrophic factor	Cntf
Q3UM29	Conserved oligomeric Golgi complex subunit 7	Cog7
Q6NVF9	Cleavage and polyadenylation specificity factor subunit 6	Cpsf6
Q64735	Complement component receptor 1-like protein	Cr1l
P70698	CTP synthase 1	Ctps1
Q3TKY6	Peptidyl-prolyl cis-trans isomerase CWC27 homolog	Cwc27
Q9CZ00	Dysbindin domain-containing protein 1	Dbn1

Q9CQV7	Mitochondrial import inner membrane translocase subunit TIM14	Dnajc19
Q9CWQ0	Diphthine synthase	Dph5
O08553;P97427	Dihydropyrimidinase-related protein 2;Dihydropyrimidinase-related protein 1	Dpysl2;Crmp1
Q1HL35	Dual specificity protein phosphatase	Dusp5
Q8CCE9	Transcription factor E4F1	E4f1
P10126;P62631	Elongation factor 1-alpha 1;Elongation factor 1-alpha 2	Eef1a1;Eef1a2
P08046	Early growth response protein 1	Egr1
P54761;P54754;Q8CBF3	Ephrin type-B receptor 4;Ephrin type-B receptor 3;Ephrin type-B receptor 1	Ephb4;Ephb3;Ephb1
Q7TNF9	Protein FAM117A	Fam117a
D3Z420	Family with sequence similarity 186, member B	Fam186b
Q3URQ4	Family with sequence similarity 8, member A1	C78339 (Fam8a1)
A2A870	Fas-binding factor 1	Fbf1
Q9R1E0	Forkhead box protein O1	Foxo1
Q69ZF3	Non-lysosomal glucosylceramidase	Gba2
Q01514	Guanylate-binding protein 1	Gbp1
A0A0G2JDV3;Q000W5	Guanylate-binding protein 6;Guanylate-binding protein 10	Gbp6;Gbp10
Q9Z0E6	Interferon-induced guanylate-binding protein 2	Gbp2
Q9D7X8	Gamma-glutamylcyclotransferase	Ggct
E0CXC2;Q8VC56	E3 ubiquitin-protein ligase RNF8	Gm28043;Rnf8
Q6PGG6	Guanine nucleotide-binding protein-like 3-like protein	Gnl3l
Q4VBD9	GDNF-inducible zinc finger protein 1	Gzf1
Q9JKS5	Intracellular hyaluronan-binding protein 4	Habp4
Q9JMG7	Hepatoma-derived growth factor-related protein 3	Hdgfrp3 (Hdgfl3)
Q8K3A0	Iron-sulfur cluster co-chaperone protein HscB, mitochondrial	Hscb
P46694	Radiation-inducible immediate-early gene IEX-1	Ier3
Q64345;E9PV48	Interferon-induced protein with tetratricopeptide repeats 3	Ifit3;l830012016Rik
P24547	Inosine-5'-monophosphate dehydrogenase 2	Impdh2
Q9JII1	72 kDa inositol polyphosphate 5-phosphatase	Inpp5e
Q6PCM2	Integrator complex subunit 6	Ints6
Q8BP00	IQ calmodulin-binding motif-containing protein 1	Iqcb1
Q8R4K2	Interleukin-1 receptor-associated kinase 4	Irak4
Q91VY5	Lysine-specific demethylase 4B	Kdm4b
Q8K135	Dyslexia-associated protein KIAA0319-like protein	Kiaa0319l
Q8C4P0	Uncharacterized protein KIAA1958 homolog	Kiaa1958
Q3UXL4	Centrosomal protein kizuna	Kiz

Q8R124	Kelch-like protein 36	Klhl36
Q6ZPT1	Kelch-like protein 9	Klhl9
P59178	Lethal(3)malignant brain tumor-like protein 2	L3mbtl2
Q99PI5	Phosphatidate phosphatase LPIN2	Lpin2
Q9CQG2	Methyltransferase-like protein 16	Mettl16
Q9D306	Alpha-1,3-mannosyl-glycoprotein 4-beta-N-acetylglucosaminyltransferase C	Mgat4c
O08605	MAP kinase-interacting serine/threonine-protein kinase 1	Mknk1
Q61733	28S ribosomal protein S31, mitochondrial	Mrps31
Q9CQF4	Mitochondrial transcription rescue factor 1	Mtres1
P01108	Myc proto-oncogene protein	Myc
P01108	Myc proto-oncogene protein	Myc
Q3KNJ2	Non-homologous end-joining factor 1	Nhej1
O35710	Nocturnin	Noct (Ccrn4l)
P12813	Nuclear receptor subfamily 4 group A member 1	Nr4a1
Q8BZN4	NUAK family SNF1-like kinase 2	Nuak2
A2AVB8	Olfactory receptor	Olfr1107
Q8K010	5-oxoprolinase	Oplah
Q8BFU7	Putative P2Y purinoceptor 10	P2ry10
Q3TIU4	2',5'-phosphodiesterase 12	Pde12
Q80YT7	Myomegalin	Pde4dip
Q7TN75	Retrotransposon-derived protein PEG10	Peg10
O35973	Period circadian protein homolog 1	Per1
Q8K411	Presequence protease, mitochondrial	Pitrm1
O35595	Protein patched homolog 2	Ptch2
P61027	Ras-related protein Rab-10	Rab10
P35293	Ras-related protein Rab-18	Rab18
Q921E2	Ras-related protein Rab-31	Rab31
Q8VCH5	Rab9 effector protein with kelch motifs	Rabepk
P70270	DNA repair and recombination protein RAD54-like	Rad54l
Q60972;Q60973	Histone-binding protein RBBP4;Histone-binding protein RBBP7	Rbbp4;Rbbp7
Q8R3C6	Probable RNA-binding protein 19	Rbm19
Q9DBX1	Regulator of cell cycle RGCC	Rgcc
Q9CPR1	RWD domain-containing protein 4	Rwdd4
Q3U1C4	SECIS-binding protein 2	Secisbp2
A2AKX3	Probable helicase senataxin	Setx
Q9Z131	SH3 domain-binding protein 5	Sh3bp5
Q60665	Ski-like protein	Skil

Q9QXX4	Calcium-binding mitochondrial carrier protein Aralar2	Slc25a13
Q8VCX2	Solute carrier family 35 member C2	Slc35c2
Q6P5F6	Zinc transporter ZIP10	Slc39a10
O88343	Electrogenic sodium bicarbonate cotransporter 1	Slc4a4
Q8BUN5	Mothers against decapentaplegic homolog 3	Smad3
Q6ZPY2	Protein SMG5	Smg5
Q8CE50	Sorting nexin-30	Snx30
Q6NSQ5	Sp140 nuclear body protein	Sp140
Q5DU57	Spermatogenesis-associated protein 13	Spata13
Q8CI15	Sphingosine kinase 1	Sphk1
P10923	Osteopontin	Spp1
O70551	SRSF protein kinase 1	Srpk1
P70297	Signal transducing adapter molecule 1	Stam
Q9Z108	Double-stranded RNA-binding protein Staufen homolog 1	Stau1
P97473	RISC-loading complex subunit TARBP2	Tarbp2
Q8R3L2	Transcription factor 25	Tcf25
Q6GQV0	Tubulin epsilon and delta complex protein 2	Tedc2
Q62314	Trans-Golgi network integral membrane protein 2	Tgoln2
Q6ZPF3	T-lymphoma invasion and metastasis-inducing protein 2	Tiam2
Q9QXG9	TERF1-interacting nuclear factor 2	Tinf2
Q8R1V4;Q99KF1	Transmembrane emp24 domain-containing protein 4;Transmembrane emp24 domain-containing protein 9	Tmed4;Tmed9
Q7TSH8	Transmembrane protein 94	Tmem94
Q80YX1	Tenascin	Tnc
Q6A070	Protein FAM179B	Togaram1 (Fam179b)
Q8BNV1	tRNA (uracil-5-)-methyltransferase homolog A	Trmt2a
E9Q7M2	TSC22 domain family, member 2	Tsc22d2
E9Q6P5	Tetratricopeptide repeat protein 7B	Ttc7b
Q0KL01	UBX domain-containing protein 2B	Ubxn2b
Q5NCI0	Up-regulator of cell proliferation	Urgcp
E9Q6Y8	Ubiquitin-specific peptidase 31	Usp31
Q8BX70	Vacuolar protein sorting-associated protein 13C	Vps13c
Q8BGW2	WW domain binding protein 1-like	Wbp1l
Q9ERF3	WD repeat-containing protein 61;WD repeat-containing protein 61, N-terminally processed	Wdr61
Q5ND34	WD repeat-containing protein 81	Wdr81
Q8K0L9	Zinc finger and BTB domain-containing protein 20	Zbtb20

P23949;P23950	Zinc finger protein 36, C3H1 type-like 2;Zinc finger protein 36, C3H1 type-like 1	Zfp36l2;Zfp36l1
A2A8R0	Zinc finger FYVE domain-containing protein	Zfyve9