Table S1 Patient characteristics

Variable	Healthy controls (21)	Type IIDiabetes (21)	Type I Diabetes (8)	Diabetic Nephropathy (19)
Age (years)	37.4±3.3	46.9±2.0	33.9±3.9	52.7±3.1
Gender (Male: Female)	17:4:4	16:5	8:0	14:5
Serum Glucose(mM/L)	<6	12.3±1.1***	14.1±0.9***	12.73±0.8***
eGFR	93.2±0.6	89.4±4.5	77.1±11.8***	41.4±8.9***
Urine Protein	-	-	-	+1: 7 +2: 8 +3: 4

Note: —indicates the lack of proteinuria.

Table S2 mRNA primers

Gene	Forward primer	Reverse primer
G3bp2	CCTTGAGTGATGGTGTAGTGGTA	CTGTCTTCTTGCTCCTCTTCCA
P53	GCCATCTACAAGAAGTCACAGC	CTTCCAGATACTCGGGATACAA
Fn	GAGTGGAAGTGTGAGCGACAT	TGAGTCTGCGGTTGGTAAATAG
Pai1	GCCAGGGTTGCACTAAACAT	GCCTCCTCATCCTGCCTAA
Colla1	CGTATCACCAAACTCAGAAGATG	ACCAGGAGGACCAGGAAGTC
Tgfb1	GTGGAAATCAACGGGATCAG	ACTTCCAACCCAGGTCCTTC
Acta2	GTTCAGTGGTGCCTCTGTCA	ACTGGGACGACATGGAAAAG
Timp1	AGGTGGTCTCGTTGATTTCT	GTAAGGCCTGTAGCTGTGCC
Col4a1	ATCCGGCCCTTCATTAGC	ACTGCGGAATCTGAATGGTC

Table S3G3BP2 mutant primers

Gene	Forward primer	Reverse primer
Hsa-G3BP21	AATCTCGAGAGCTCCACTGTTGGCAAAGTCTT GGCAGTGGTACATTATTCATCGTGTTTGCATTC TTGTTAATT	AATGCGGCCGCCAAAGAAATGATCAAAAAGGCTGTG TCACATTCCAAAGCCAAAAAAAAAAATTAACAAGAAT GCAAACA
Hsa-G3BP22	GGCGGCTCGAGCACAGCCTTTTTGATCATTT	AATGCGGCCGCCTTGTTAAGGTTTATGTGTA
Hsa-G3BP2-mut1	GCTTTGGTTACACTCACAGCCTTTTTGATC	GGCTGTGAGTGTAACCAAAGCCAAAAAAAAA
Hsa-G3BP2-mut2	TTCTTTGTACACTAAAGCATCTTTGGTTATC	ATGCTTTAGTGTACAAAGAAATGATCAAAAAG

Underlined sequences indicate the endonuclease restriction site

Table S4miRNA abundance

miRNA name	NG (Ct)
miR-U6	16.37 ± 0.04
miR-23a*	25.39 ± 0.09
miR-23b*	23.83 ± 0.04
miR-25	16.42 ± 0.04
miR-29a	28.99 ± 0.07
miR-29b	ND
miR-29c	32.22 ± 0.07
miR-32	33.37 ± 0.17
miR-33a	34.16 ± 0.09
miR-92a*	20.09 ± 0.06
miR-92b*	22.04 ± 0.07
miR-129-5p	23.88 ± 0.14
miR-137	33.88 ± 0.61
miR-363	ND
miR-367	31.03 ± 0.11
miR-383	ND
miR-146a	28.80 ± 0.05

ND = not detected

Supporting Figure Legends

Figure S1: A-C: Representative image of H&E, PAS, and anti-FN staining from kidney sections of wild-type mice and 3-month-oldmice with type 1 diabetes； D:quantification of *miR-23a* expression in the serum of patients with T1DM or T2DM diabetes and DN； E: Quantification of *miR-23a* expression in mice with type 1 diabetes (Dia) and non-diabetic controls (Con)； F: Quantification of *miR-23b* transfection efficiency in HK-2 cells exposed to HG； G: Quantification of *miR-23a* in HK-2 cells after *miR-23b* mimic transfection； H: Quantification of *G3BP2* mRNA in HK-2 cells after *miR-23b* mimic transfection； I-J: Quantification of *miR-23a/b* in HK-2 cells after *miR-23b* antagomir transfection； K: Quantification of *G3BP2* mRNA expression after *G3BP2* siRNA was transfected into HK-2 cells exposed to HG； L: Diagram showing consensus P53 binding sites in the *miR-23b* promoter as determined by bioinformatics (PROMO) analyses； M: Western blotting for p38, phosphorylated p38 (p-p38), p53, phosphorylated p53 (p-p53),and G3BP2 from HK-2 cells treated with *G3BP2* siRNA and p38 inhibitor SB203580 (β-actin as loading control)； N:Protein network construction Venn diagram of human miR-23b.(*,**,and *** indicate $p< 0.05$, $p<0.01$, and $p< 0.001$, respectively).

Figure S2: A-B: *miR-23b* and *G3BP2*mRNA expression level in the *db/db* mouse kidney after treatment with *miR-23b* angamior [miR-23b(+)] or injection of *G3BP2*siRNA for 1 month; C-D: *miR-23a/b* expression level and as correlated with

the serum TGFβ1 protein levels from DN patients; E-F: Quantification of kidney weight and as a ratio of body weight from *miR-23b* angamior- and *G3BP2*siRNA-treated *db/db* mice; G: Quantification of the thickness of the glomerular basement membrane (GBM) from different mice; H: Western blotting for p38, p-p38, p53, p-p53, and β-actin in HK-2 cells following a 24-hour treatment with p38MAPK inhibitor SB203580. I: Immunofluorescence and immunochemistry for ， G3BP2 and FN, FSP1， anti-smooth muscle actin (α-SMA) from different kidney sections. (*,**,and *** indicates $p< 0.05$, $p<0.01$, $p< 0.001$ respectively).

Figure S3: A-C: Quantification of *p53*, *miR-23b*, and *G3BP2* mRNA expression from the kidneys of *db/db* mice (n=5) following a 1-month injection with *p53*siRNA; D-E: Quantification of proteinuria and creatinine level from *db/db* mice following a 1-month injection with *p53*siRNA; F: Representative images of H&E (top panel), PAS(second panel), anti-smooth muscle actin (α-SMA,third panel), and TEM (fourth panel) staining from kidney sections of *p53*siRNA-treated *db/db* mice; G-H: Quantification of α-SMA positive area within glomeruli from Figure F) and GBM thickening.(*,**,and *** indicates $p< 0.05$, $p<0.01$, and $p< 0.001$, respectively).

Figure S4: A:*miR-23b* and *G3BP2*mRNA expression level in normal mice (n=4) kidney tissues after *miR-23b* antagomir injection for 1 month; B: Representative images of Collagen I(top panel),Collagen IV (second panel), α-SMA (third panel), FSP1 (fourth panel) in *miR-23b* antagomir-treated mouse kidneys and quantification

of the thickness of the glomerular basement membrane (GBM,fifth panel) from mice treated with*miR-23b* antagomir or miRNEG. (*,**,and ***indicates $p< 0.05$, $p<0.01$, and $p< 0.001$, respectively).

Fig. S5: Protein network construction of miRNA candidate targets.

Fig.S1

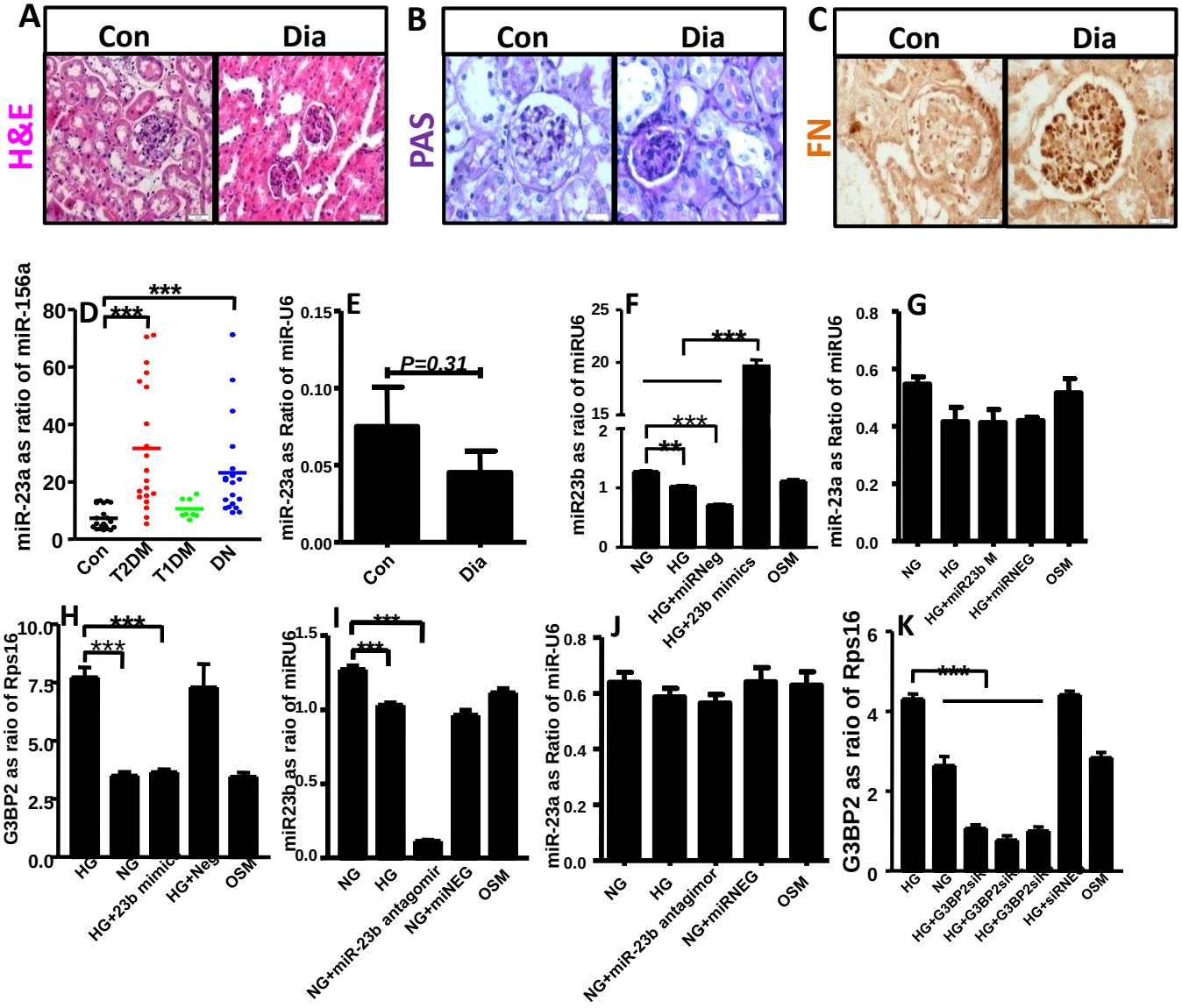

A
Con
Dia
H&E
B
Con
Dia
PAS
C
Con
Dia
FN
D
miR-23a as ratio of miR-156a
Con
T2DM
T1DM
DN
E
miR-23a as Ratio of miR-U6
P=0.31
Con
Dia
F
miR23b as raio of miRU6
NG
HG
HG+miRNeg
HG+23b mimics
OSM
G
miR-23a as Ratio of miRU6
NG
HG
HG+miR23b M
HG+miRNEG
OSM
H
G3BP2 as raio of Rps16
HG
NG
HG+23b mimic
HG+Neg
OSM
I
miR23b as raio of miRU6
NG
HG
NG+miR-23b antagomir
NG+miNEG
OSM
J
miR-23a as Ratio of miR-U6
NG
HG
NG+miR-23b antagimor
NG+miRNEG
OSM
K
G3BP2 as raio of Rps16
HG
NG
HG+G3BP2siR
HG+G3BP2siR
HG+G3BP2siR
HG+siRNE
OSM
L
P53 consensus binding site RRRC(A/T)(A/T)GYYY (0-13bp) R=A,G Y=C,T
Human miR-23b promoter (29 binding sites)
-2572bp
0bp
250bp
M
G3BP2
P-p38
P38
P-P53
P53
HG
SB203580
G3BP2siRNA
NEG
N
hsa-miR-23b-3p
miRanda
3114
StarBase(CLIP-Seq)
28
TargetScan
149
405
38
0
miRDB
68
35
13
60
8
1
428
476
41

Fig.S2

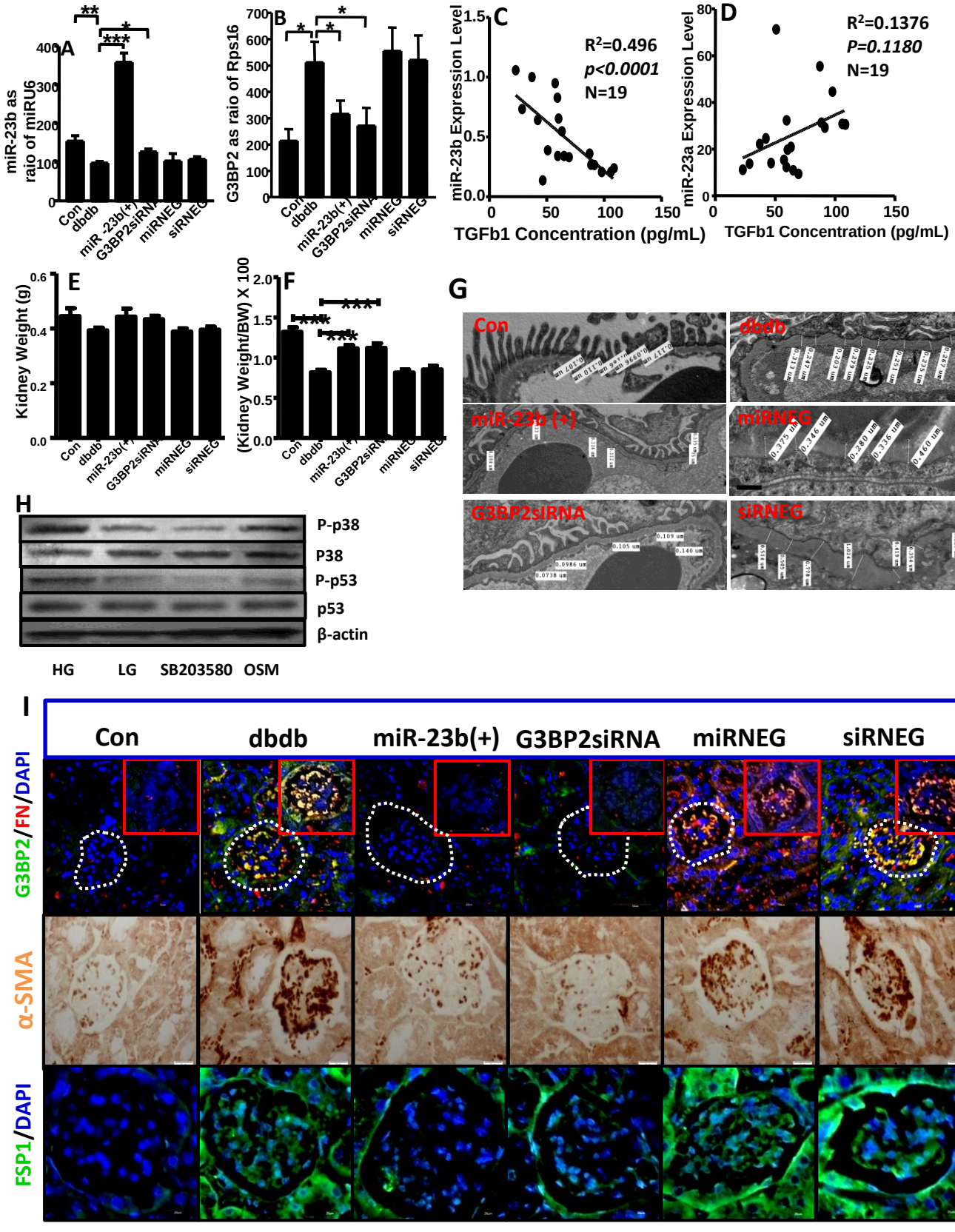

A
miR-23b as raio of miRU6
Con
dbdb
miR -23b(+)
G3BP2siRNA
miRNEG
siRNEG
B
G3BP2 as raio of Rps16
C
miR-23b Expression Level
R²=0.496
p<0.0001
N=19
TGFb1 Concentration (pg/mL)
D
miR-23a Expression Level
R²=0.1376
P=0.1180
N=19
TGFb1 Concentration (pg/mL)
E
Kidney Weight (g)
F
(Kidney Weight/BW) X 100
G
Con
dbdb
miR-23b (+)
miRNEG
G3BP2siRNA
siRNEG
H
P-p38
P38
P-p53
p53
β-actin
HG
LG
SB203580
OSM
I
Con
dbdb
miR-23b(+)
G3BP2siRNA
miRNEG
siRNEG
G3BP2/FN/DAPI
α-SMA
FSP1/DAPI

Fig.S3

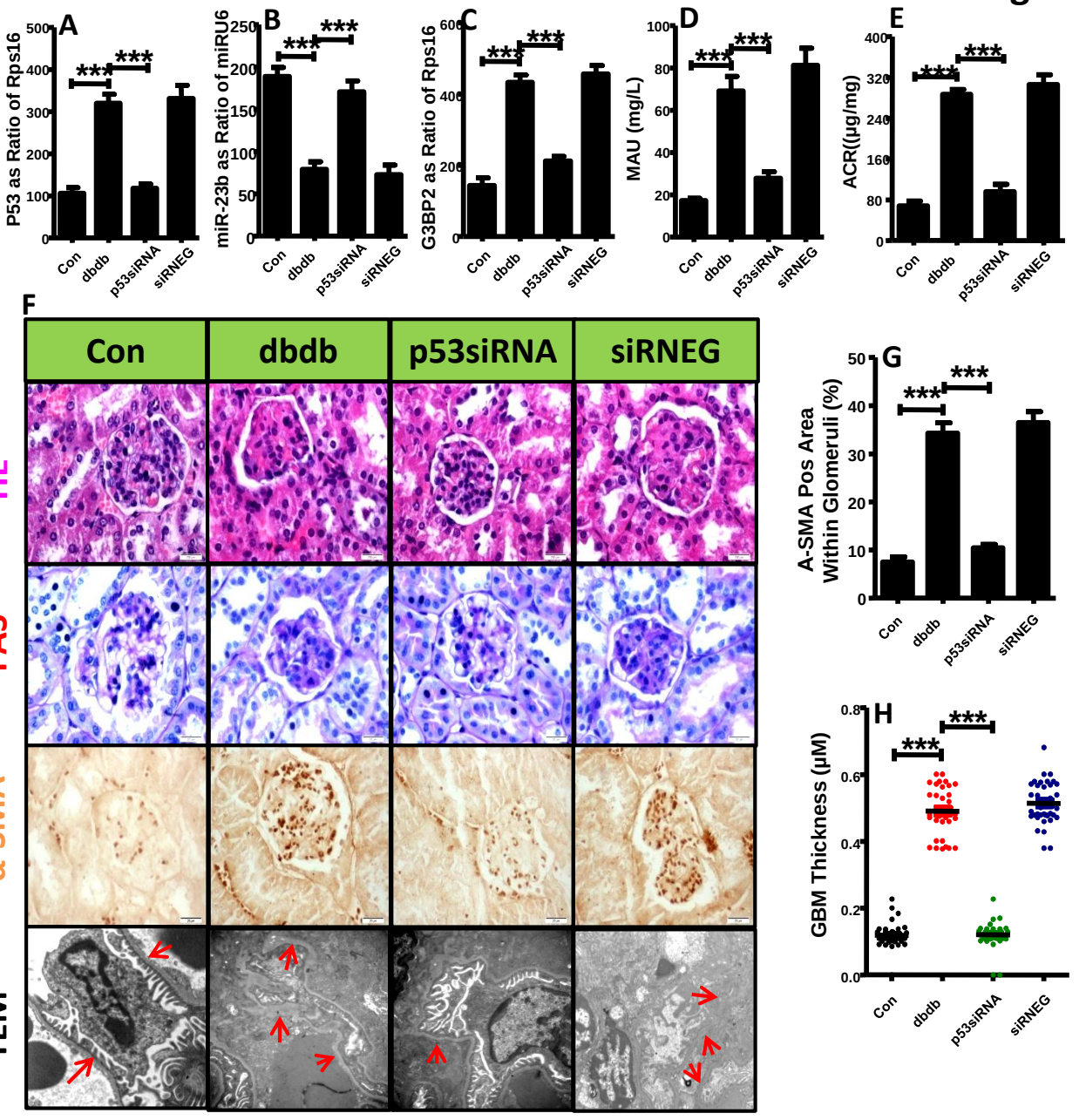

A
P53 as Ratio of Rps16
B
miR-23b as Ratio of miRU6
C
G3BP2 as Ratio of Rps16
D
MAU (mg/L)
E
ACR((μg/mg)
Con
dbdb
p53siRNA
siRNEG
***
F
Con
dbdb
p53siRNA
siRNEG
HE
PAS
α-SMA
TEM
G
A-SMA Pos Area Within Glomeruli (%)
H
GBM Thickness (μM)

Fig.S4

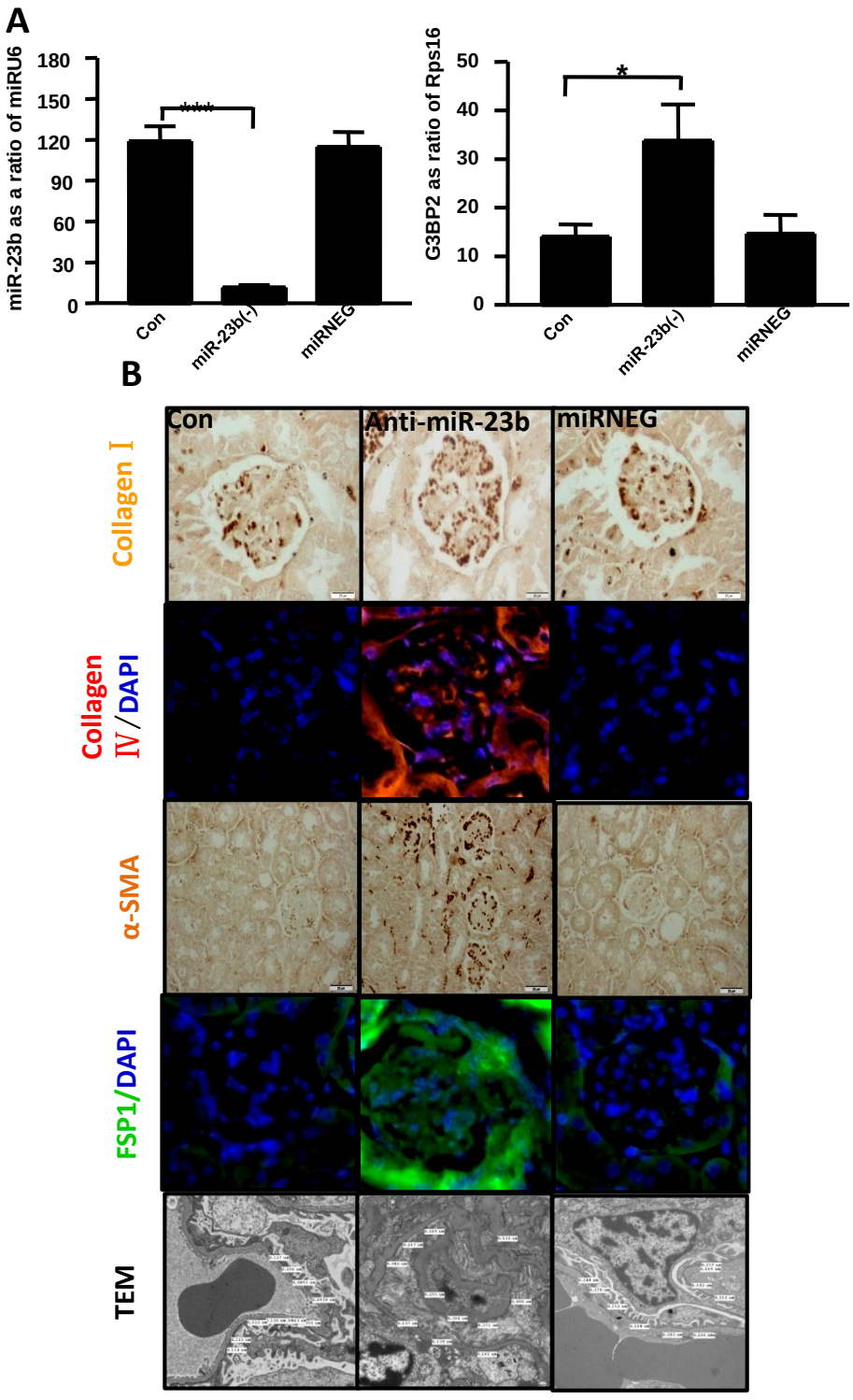
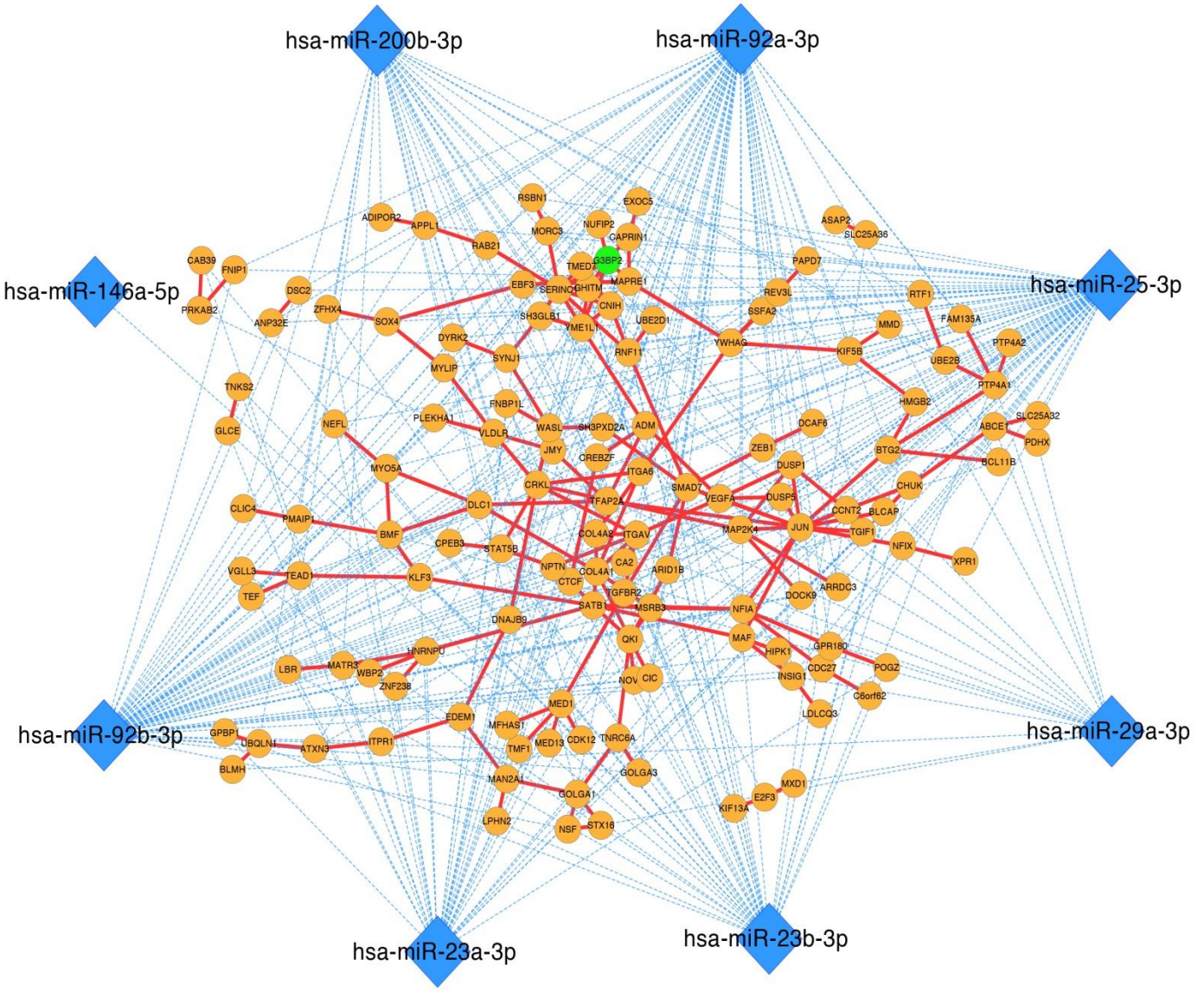

A
miR-23b as a ratio of miRU6
180
150
120
90
60
30
0
****
Con
miR-23b(-)
miRNEG
G3BP2 as ratio of Rps16
50
40
30
20
10
0
*
Con
miR-23b(-)
miRNEG
B
Con
Anti-miR-23b
miRNEG
Collagen Ⅰ
Collagen Ⅳ/DAPI
α-SMA
FSP1/DAPI
TEM

Fig.S5


hsa-miR-200b-3p
hsa-miR-92a-3p
hsa-miR-146a-5p
hsa-miR-25-3p
hsa-miR-92b-3p
hsa-miR-29a-3p
hsa-miR-23a-3p
hsa-miR-23b-3p
RSBN1
EXOC5
ADIPOR2
APPL1
MORC3
NUFIP2
CAPRIN1
ASAP2
SLC25A36
RAB21
G3BP2
CAB39
FNIP1
TMED7
PAPD7
EBF3
SERINC3
GHITM
MAPRE1
DSC2
REV3L
RTF1
PRKAB2
ZFHX4
SOX4
CNIH
SSFA2
FAM135A
ANP32E
SH3GLB1
UBE2D1
MMD
YME1L1
DYRK2
YWHAG
KIF5B
PTP4A2
SYNJ1
RNF11
UBE2B
MYLIP
PTP4A1
TNKS2
HMGB2
FNBP1L
SLC25A32
GLCE
PLEKHA1
WASL
SH3PXD2A
ADM
DCAF6
ABCE1
NEFL
VLDLR
ZEB1
PDHX
JMY
BTG2
OREBZF
DUSP1
BCL11B
MYO5A
ITGA6
CRKL
SMAD7
CHUK
CLIC4
DLC1
TFAP2A
VEGFA
DUSP5
CCNT2
BLCAP
PMAIP1
BMF
COL4A2
ITGAV
MAP2K4
JUN
TGIF1
NFIX
CPEB3
STAT5B
CA2
XPR1
VGLL3
TEAD1
NPTN
COL4A1
ARID1B
KLF3
CTCF
ARRDC3
TEF
TGFBR2
DOCK9
SATB1
MSRB3
NFIA
DNAJB9
QKI
MAF
HNRNPU
HIPK1
GPR180
LBR
MATR3
WBP2
CDC27
POGZ
ZNF238
NOV
CIC
INSIG1
C6orf62
MED1
LDLCQ3
EDEM1
MFHAS1
GPBP1
UBQLN1
ATXN3
ITPR1
TMF1
MED13
CDK12
TNRC6A
BLMH
GOLGA3
MAN2A1
MXD1
GOLGA1
E2F3
KIF13A
LPHN2
NSF
STX16