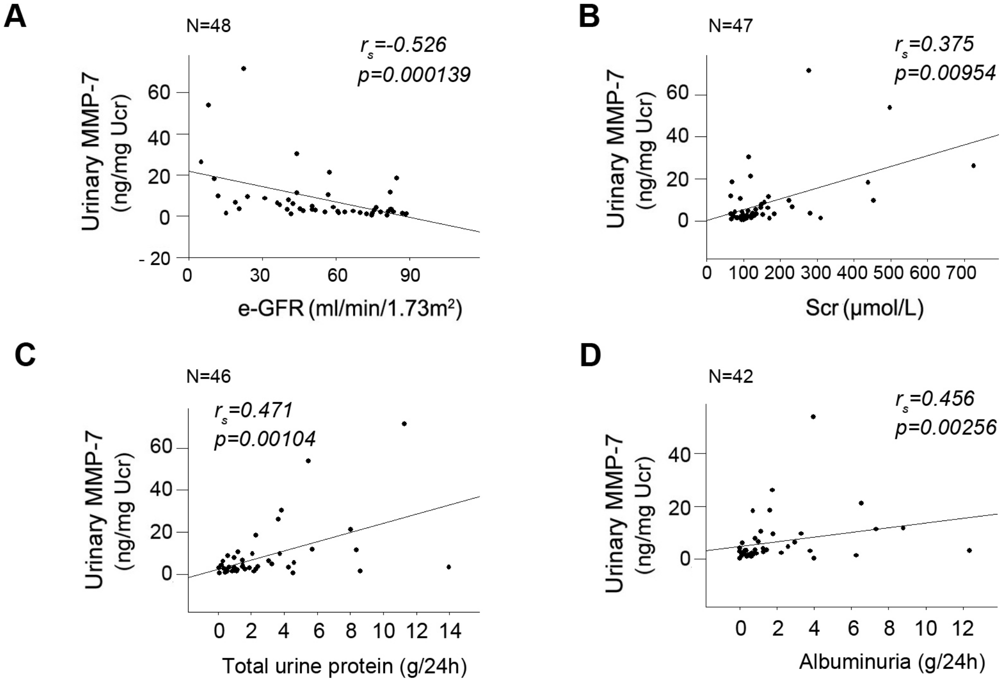
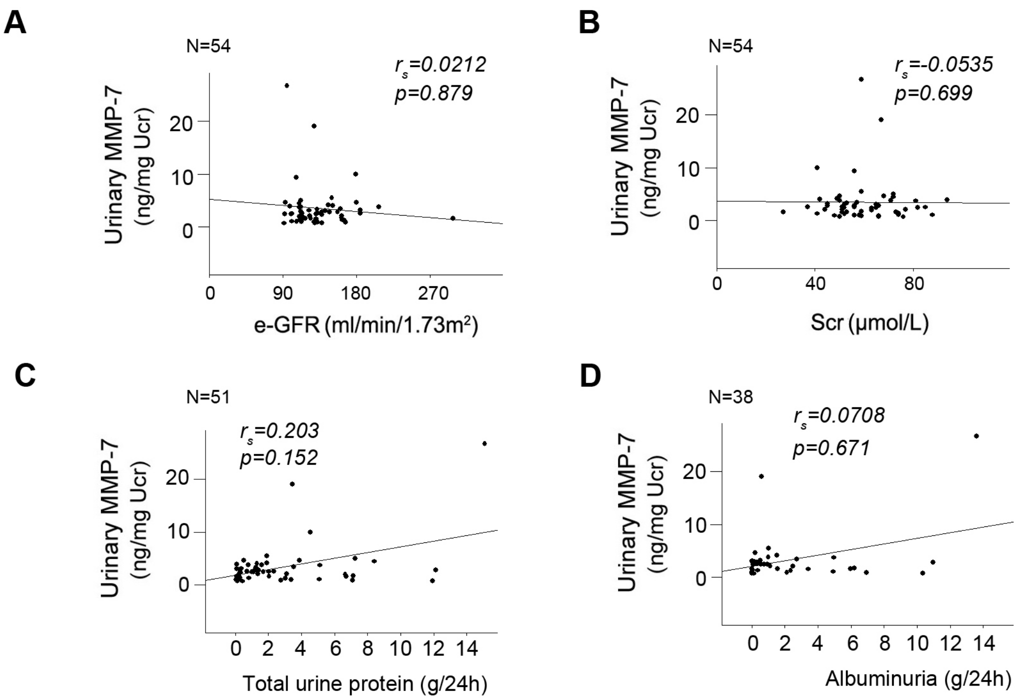
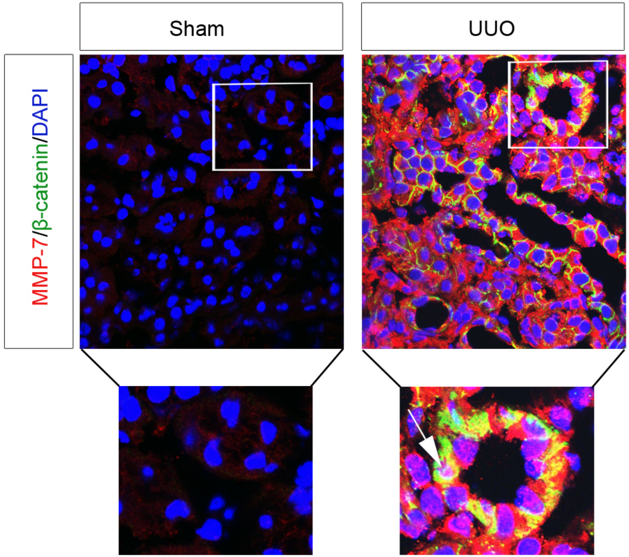


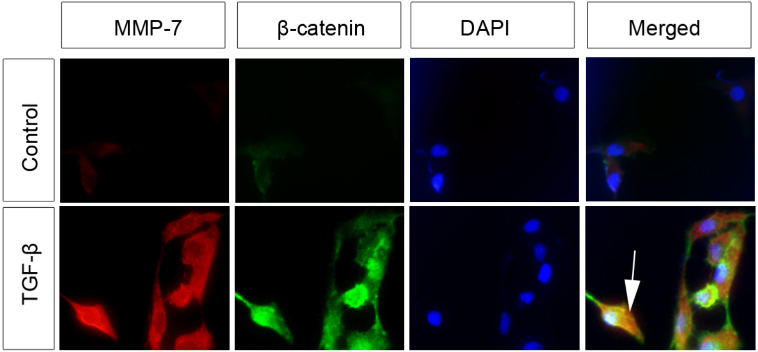
Supplementary Figure 1. Urinary MMP-7 correlates with kdiney function decline and proteinuria in the CKD patients with renal impairment (eGFR < 90 ml/min/1.73m²). Linear regression shows correlations between urinary MMP-7 levels and eGFR (A), serum creatinine (B), total protein excretion (g/24h) (C), and albumin excretion (mg/24h) (D). The Spearman's correlation coefficient (r_s) is shown.



Supplementary Figure 2. Urinary MMP-7 does not correlate with kidney function in the CKD patients with relatively normal renal function (eGFR >90 ml/min/1.73m^2). Linear regression shows no correlation between urinary MMP-7 and eGFR (A), serum creatinine (B) and albumin excretion (mg/24h) (D), except for total protein excretion (g/24h). The Spearman's correlation coefficient (r_s) is shown.



Supplementary Figure 3. Co-localization of MMP-7 and β-catenin in renal tubular epithelium after UUO. Cryosections from sham and UUO kidneys were immunostained for MMP-7 (red) and b-catenin (green). Cell nuclei were visulized by DAPI staining (blue). Boxed areas were enlarged. Arrow indicate postive staining for β-catenin in the cytoplasm and nucleus of renal tubular cells.



Supplementary Figure 4. Co-localization of MMP-7 and β-catenin in kidney tubular epithelial cells after TGF-β1 treatment. Human proximal tubular epithelial cells (HKC-8) were incubated with TGF-β1 (2 ng/ml) for 2 days. Cells were immunostained for MMP-7 (red) and β-catenin (green). Arrow indicates co-localization of MMP-7 and nuclear β-catenin.

Supplementary Table 1. Demographic characteristics of the participants in the study

Characteristic	Cohort	
	Healthy Adults (N=20)	CKD patients (N=102)
Gender--No. (%)		
Male	10 (50)	49 (48)
Female	10 (50)	53 (52)
Age at entry--years*		
Mean±SEM	37.05±1.804	37.88±1.395
Range	21-52	15-69
eGFR(ml/min/1.73m^2)--No. (%)		
>90	20 (100)	54 (53)
<90	0 (0)	48 (47)
Pathological Diagnosis--No. (%)†		
MsPGN	0 (0)	14 (14)
FSGS	0 (0)	13 (13)
MN	0 (0)	17 (17)
MPGN	0 (0)	3 (3)
LN	0 (0)	4 (4)
MGB	0 (0)	18 (18)
EPG	0 (0)	2 (2)
TMA	0 (0)	2 (2)
DMD	0 (0)	2 (2)
Without Pathological Diagnosis --No. (%)‡		
	0 (0)	27 (26)

***There was no significant difference in age between healthy and CKD groups. The urinary MMP-7 was measured from all participants.

†MsPGN: Mesangial Proliferative Glomerulonephritis; FSGS: Focal Segmental Glomerulosclerosis; MN: Membrane Nephritis; MPGN: Membranoproliferative Glomerulonephritis; LN: Lupus Nephritis; MGB: Minor Glomerular Abnormality; EPG: Endocapillary Proliferative Glomerulonephritis; TMA: Thromboticmicroangiopathy.

‡These patients did not have biopsy-based pathological diagnosis. Among them, the majority (18 out of 27) was clinically diagnosed as glomerulonephritis. The rest clinical diagnosis includes lupus nephritis (3 cases), diabetic nephropathy (2 cases), nephrotic syndrome (2 cases), and end-stage renal disease (2 cases).

Supplementary Table 2. Parameter values of healthy subjects and CKD patients

Healthy Adults				CKD Patients†						
No.	Gender	Age	MMP-7 (ng/mg Ucr)	No.	Gender	Age	MMP-7 (ng/mg Ucr)	Scr	GFR	TP
1	M	52	1.0537216	1	F	21	2.016565	85	109.9697537	6.65
2	F	36	0.5428735	2	M	43	3.753949	99	111.6278672	0.79
3	M	38	1.3776920	3	F	31	4.613819	133	93.03814744	3.89
4	F	38	0.6991158	4	F	61	30.16607	108	44.22374315	3.84
5	M	21	0.3049836	5	M	25	2.510768	278	101.2482664	2.01
6	M	45	0.2939839	6	M	20	1.195895	157	88.84781552	2.17
7	M	26	0.3085750	7	F	62	5.252555	58	37.26854662	4.6
8	M	26	0.6452281	8	M	33	0.913289	56	72.59212578	
9	F	45	1.6151652	9	M	49	71.49406	72	22.49993996	11.28
10	F	32	0.9562117	10	F	59	8.638108	65	31.08648412	0.58
11	M	42	0.2092315	11	F	39	1.048078	56	106.6941833	3.37
12	M	45	1.1568605	12	F	49	9.355867	92	106.072786	
13	M	28	0.9806487	13	M	40	4.997616	72	111.4651177	7.25
14	F	32	0.2206114	14	M	22	3.088631	44	141.6136251	0.074
15	M	45	0.6087679	15	F	37	0.966893	53	112.2971748	0.048
16	F	42	0.9510624	16	F	63	10.41257	167	56.83887573	1.21
17	F	42	1.7341202	17	M	43	4.45481	56	109.8406415	8.4
18	F	40	0.1422573	18	F	24	2.103892	171	161.9554222	0.25
19	F	35	2.1279762	19	F	23	3.346446	94	131.7885437	1.25
20	F	31	0.0746234	20	M	38	6.057421	37	42.65873573	0.3
				21	F	35	2.552577	74	113.5711353	1.08
				22	M	37	0.946582	88	41.73461357	0.51
				23	M	50	1.873304	48	78.3138192	0.51
				24	F	34	2.627738	439	184.3010263	0.71
				25	M	35	1.368714	45	110.9633706	0.3
				26	M	21	1.082362	51	100.7802282	5.07
				27	F	47	0.94157	148	127.801076	0.071
				28	F	37	18.15784	282	10.43214841	
				29	M	48	3.17761	67	184.7649743	
				30	F	41	2.151151	41	122.515675	3.1
				31	F	39	6.338253	66	36.19550402	3.08
				32	M	69	3.488963	76	20.64643255	2.42
				33	F	60	3.223148	112	82.76900553	0.99
				34	F	22	9.988476	66	178.8374169	4.55
				35	M	28	0.900107	77	132.4927383	2.76
				36	F	18	0.702679	100	91.37840207	0.43
				37	F	37	4.621362	85	50.46383076	3.27
				38	M	23	2.87754	99	137.8905188	12.14
				39	M	25	2.120915	133	113.4819368	1.36

	40	M	30	0.39069	108	80.884116	0.084
	41	F	28	2.417886	65	100.0570442	1.08
	42	M	60	0.390666	95	74.55231157	4.55
	43	M	37	1.224698	52	164.8564902	3.02
	44	M	27	2.100814	99	83.5966741	0.95
	45	F	40	0.720414	68	88.34649003	0.44
	46	F	31	1.384761	82	74.96096242	0.54
	47	F	40	4.087244	77	76.54102755	1.5
	48	M	30	2.324767	63	137.8555481	0.32
	49	M	30	19.06357	67	128.4023349	3.45
	50	M	22	1.596759	73	123.8603986	6.72
	51	M	16	3.873993	94	98.69450166	0.093
	52	F	68	3.193376	66	82.10502779	13.97
	53	M	49	2.456069	82	92.05934237	1
	54	F	22	4.136138	49	145.5876992	1.91
	55	M	15	3.827837	50	207.1862584	1.6
	56	F	35	1.308029	41	162.7512676	0.81
	57	M	32	1.120834	74	113.000407	0.187
	58	F	26	0.741254	50	137.4902142	0.117
	59	F	41	1.581844	53	117.1961343	0.087
	60	M	22	3.741439	81	109.8538652	5.11
	61	M	32	0.738898	66	128.9495143	11.93
	62	M	44	2.851435	99	75.70681054	0.056
	63	M	17	0.93672	59	166.8685551	7.09
	64	M	57	21.20887	120	57.53089156	8.01
	65	F	35	2.37431		67.06115615	2.28
	66	M	20	1.708673	59	161.4531592	7.13
	67	M	25	3.469689	57	160.5674287	3.54
	68	F	28	2.572637	51	132.3773551	2.32
	69	M	30	4.684635	50	179.9914428	0.51
	70	F	66	26.12333	726	5.190802249	3.65
	71	F	63	26.73705	59	94.90594335	15.09
	72	M	52	1.427636	85	87.26111119	8.61
	73	F	38	3.144037	52	121.6630878	0.35
	74	F	44	4.005416	42	151.1026875	1.31
	75	F	30	1.544102	51	130.53626	
	76	M	25	2.828993	152	51.77135547	1.91
	77	F	27	2.456538	52	130.4031435	1.69
	78	M	38	1.979944	118	63.68995639	1.16
	79	M	56	3.188688	135	50.40011411	0.68
	80	M	40	1.469935	121	61.2302965	1.12
	81	M	31	11.33516	168	44.15353942	8.37
	82	M	29	3.11818	184	40.29510546	4.26
	83	F	68	11.66921	66	82.10502779	5.69
	84	F	68	6.654543	233	19.15114397	1.47
	85	F	34	2.788807	45	147.0365494	0.29

	86	F	45	18.45822	69	84.81814544	2.28
	87	F	35	1.802343	104	55.59304685	1
	88	F	40	1.215419	310	15.34168956	0.85
	89	F	28	9.494601	224	23.99736017	2.08
	90	M	30	2.132131	128	60.83351883	1.08
	91	F	60	2.561155	110	46.70796013	0.35
	92	F	33	3.450175	125	45.50197825	1.47
	93	F	41	4.262594	96	59.04547728	0.2
	94	F	57	53.83164	498	8.26185381	5.48
	95	F	43	2.291817	72	81.501756	1.65
	96	F	57	2.906486	52	112.0501156	1.19
	97	M	31	2.859992	56	156.8785083	1.41
	98	M	29	5.480068	59	149.7231112	1.9
	99	F	21	7.774287	149	40.7244561	0.99
	100	F	19	1.606247	27	298.3609618	2.04
	101	M	65	9.63563	453	12.09372591	3.75
	102	M	44	1.734747	106	69.96728085	0.99

†Scr: Serum creatinine (µmol/l); GFR: Glomerular filtration rate (ml/min/1.73m^2); Scr, serum creatinine (µmol/L); TP: Total proteinuria (g/24h).

Supplementary Table 3. Nucleotide sequences of the primers used for RT-PCR

Mouse gene	Primer Sequence 5' to 3'	
	Forward	Reverse
MMP2	AAGGGGATCCAGGAGCTCTA	GCTTGTCACGTGGTGTCACT
MMP3	AAGTTCCTCGGGTTGGAGAT	TTTCAATGGCAGAATCCACA
MMP7	TAGGCGGATGCTCACTTTT	TTCTGAATGCCTGCAATGTC
MMP8	AGGGAACCCAGCACCTATTC	GGATGCCGTCTCCAGAAGTA
MMP9	CACCACCACAACTGAACCAC	CTCAGAAGAGCCCGCAGTAG
MMP11	GAGTCTGGCTCATGCCTACC	GGGCTTGTGGAGAACCTGTA
MMP13	CCAGAACTTCCCAACCATGT	GTCTTCCCCGTGTTCTCAAA
MMP14	AGTCAGGGTCACCCACAAAG	GCATTGGGTATCCATCCATC
β-actin	CAGCTGAGAGGGAAATCGTG	CGTTGCCAATAGTGATGACC
α-SMA	GAGGCACCACTGAACCCTAA	CATCTCCAGAGTCCAGCACA
Collagen I	ATCTCCTGGTGCTGATGGAC	ACCTTGTTTGCCAGGTTCAC
E-cadherin	TTCAACCCAAGCACGTATCA	AACGAACTGCTGGTCAGGATC
PAI-1	TGGAAAGAGCCAGATTTATCAT	GAAGTAGAGGGCATTCACCAG