Supplementary Table 1. Anti-PLA2R IgG subclasses in the patients with idiopathic and secondary membranous nephropathy.

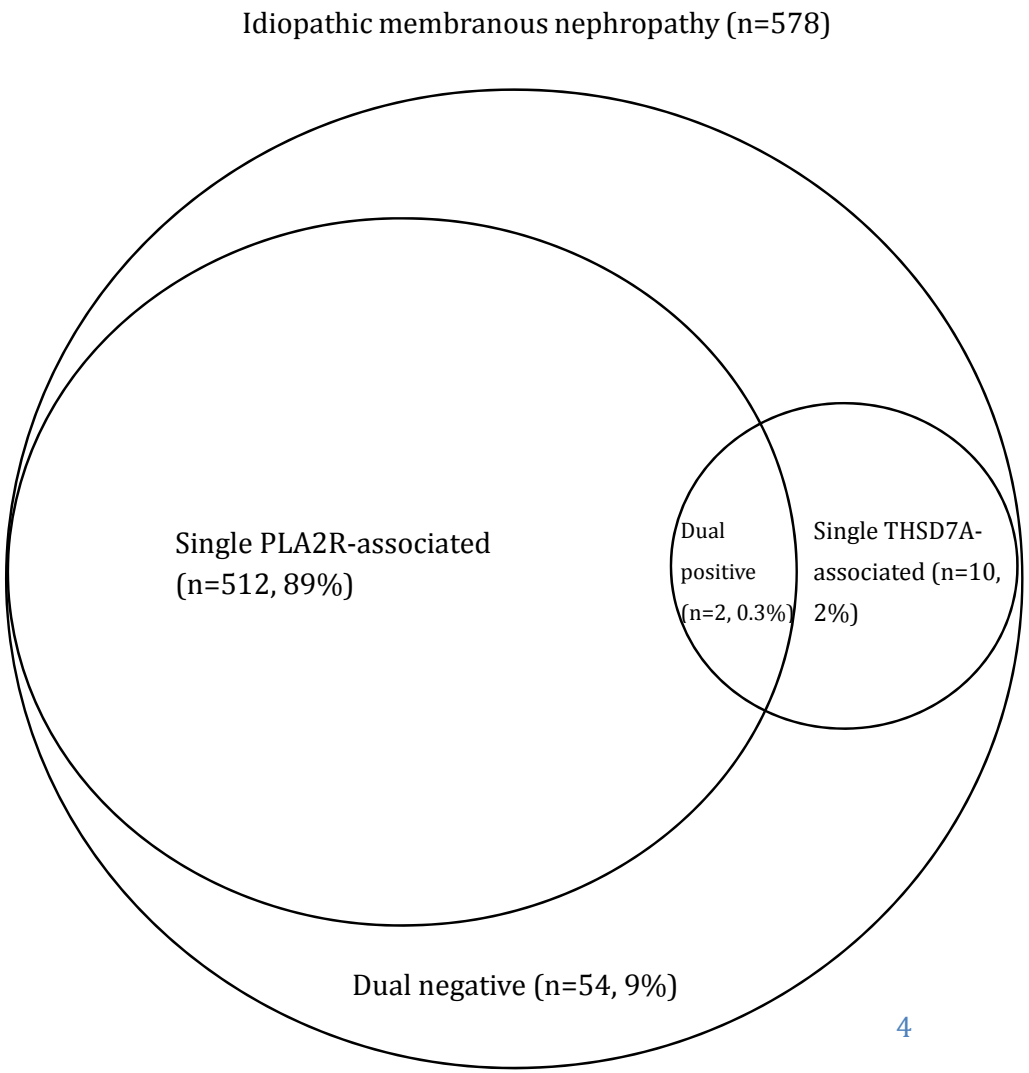
Anti-PLA2Rantibodies, n (%)	Idiopathic membranous nephropathy (n=54)	Secondary membranous nephropathy			
		Hepatitis B virus (n=11)	P value	Cancers (n=18)	P value
IgG 1	24 (44%)	5 (45%)	0.40	5 (28%)	0.09
IgG 2	19 (35%)	1 (9%)		2 (11%)	
IgG 3	17 (31%)	3 (27%)		9 (50%)	
IgG 4	49 (91%)	4 (36%)		8 (44%)	

Supplementary Table 2. Clinical data of 44 patients with membranous nephropathy and cancer.

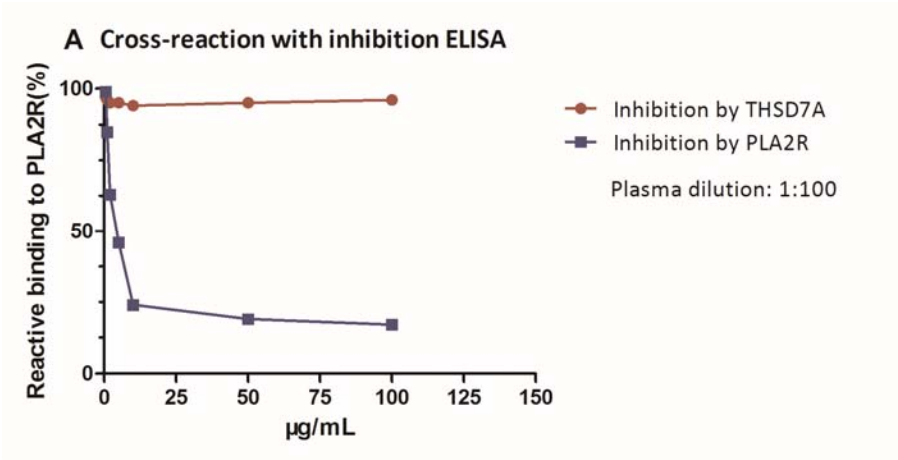
No.	Age (yrs)	Gender	Urinary protein (g/24h)	Albumin (g/L)	Serum creatinine (mg/dL)	eGFR (ml/min/1.73m^2)	Hemoglobin (g/dL)	Anti-PLA2R Abs	Anti-THSD7A Abs	MN Stages	Type of cancer	Interval from cancer (month)
1	59	Female	6	26	0.58	132	13	-	-	I	Breast cancer	1
2	65	Female	4	29	0.63	115	12	-	-	I	Breast cancer	72
3	79	Female	6	36	0.61	116	12	+	-	I	Breast cancer	228
4	66	Female	4	32	0.59	125	14	-	-	I	Breast cancer	180
5	64	Female	4	25	1.03	64	11	+	-	II	Breast cancer	60
6	73	Female	4	26	0.88	75	11	+	-	II	Breast cancer	36
7	71	Male	6	27	2.35	28	12	-	-	II	Breast cancer	2
8	58	Female	6	27	0.58	132	13	+	-	I	Breast cancer	96
9	57	Female	7	24	0.53	145	11	-	-	I	Breast cancer	7
10	38	Female	4	30	0.60	136	13	-	-	I	Breast cancer	1
11	59	Male	4	28	0.75	122	14	-	-	II	Lung cancer	4
12	67	Male	8	20	1.55	48	9	-	-	II	Lung cancer	1
13	59	Male	4	29	0.80	111	12	+	-	I	Lung cancer	5
14	65	Male	11	28	0.81	107	14	-	-	II	Lung cancer	2
15	85	Female	15	22	1.52	37	11	-	-	I	Sigmoid colon cancer	3
16	81	Female	8	25	1.38	42	11	+	-	I	Sigmoid colon cancer	36
17	51	Male	9	20	1.65	47	10	+	-	II	Sigmoid colon cancer	0.1
18	70	Male	4	24	0.79	109	11	-	-	II	Colon cancer	1
19	57	Male	10	21	0.94	92	15	+	-	I	Rectal cancer	108
20	74	Male	4	28	0.81	106	13	-	-	I	Rectal cancer	1

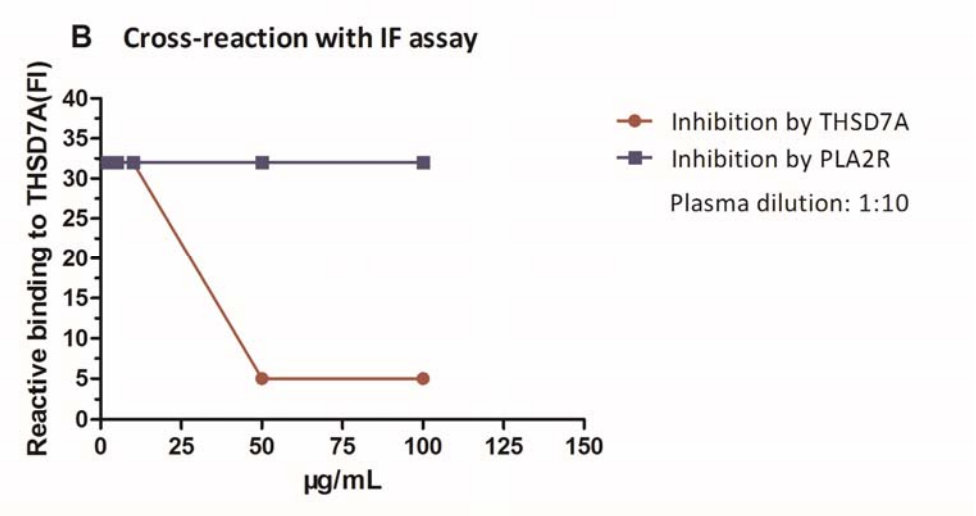
21	81	Male	16	20	1.29	58	12	+	-	I	Rectal cancer	2
22	40	Male	4	15	1.02	88	12	-	-	I	Chronic myeloid leukemia	11
23	42	Female	4	26	0.51	163	14	-	-	I	Chronic myeloid leukemia	31
24	35	Male	40	18	1.12	81	8	-	-	I	Chronic myeloid leukemia	0.3
25	38	Female	5	31	0.58	143	14	+	-	I	Thyroid cancer	72
26	57	Female	4	32	0.68	108	15	-	-	I	Thyroid cancer	0.2
27	55	Male	9	24	0.62	155	18	+	-	II	Thyroid cancer	24
28	53	Male	8	17	0.87	102	13	-	+	I	Bladder cancer	84
29	58	Male	14	25	0.94	91	15	+	-	II	Bladder cancer	3
30	68	Male	4	21	0.84	103	11	+	-	I	Prostate cancer	4
31	73	Male	5	29	1.20	65	12	+	-	I	Prostate cancer	3
32	53	Female	4	37	0.78	92	13	-	-	I	Cervical cancer	108
33	47	Female	6	24	0.85	80	12	-	-	II	Cervical cancer	1
34	42	Female	8	28	0.63	124	13	-	-	II	Uterus cancer	4
35	76	Female	5	19	0.77	88	11	-	-	II	Endometrial cancer	13
36	61	Male	11	19	1.64	45	10	+	-	I	Gastric cancer	4
37	67	Male	9	24	0.68	142	13	-	-	I	Gastric cancer	1
38	65	Male	4	29	0.90	93	12	-	-	II	Lymphoma	5
39	68	Male	28	20	1.55	48	9	-	-	II	Lymphoma	2
40	57	Female	3	29	0.89	77	15	-	-	I	Chronic lymphocytic leukemia	4
41	61	Female	4	26	0.72	98	10	+	-	II	Multiple myeloma	0.3
42	49	Female	4	25	0.68	111	12	-	-	II	Acute myelogenous leukemia	72
43	44	Female	5	30	0.70	109	12	+	-	II	Parathyroid carcinoma	3
44	52	Female	4	25	0.80	89	10	+	-	I	Nasal basal cell carcinoma	1

Supplementary Figure 1. Prevalence of THSD7A-associated and PLA2R-associated idiopathic membranous nephropathy in the present cohort.



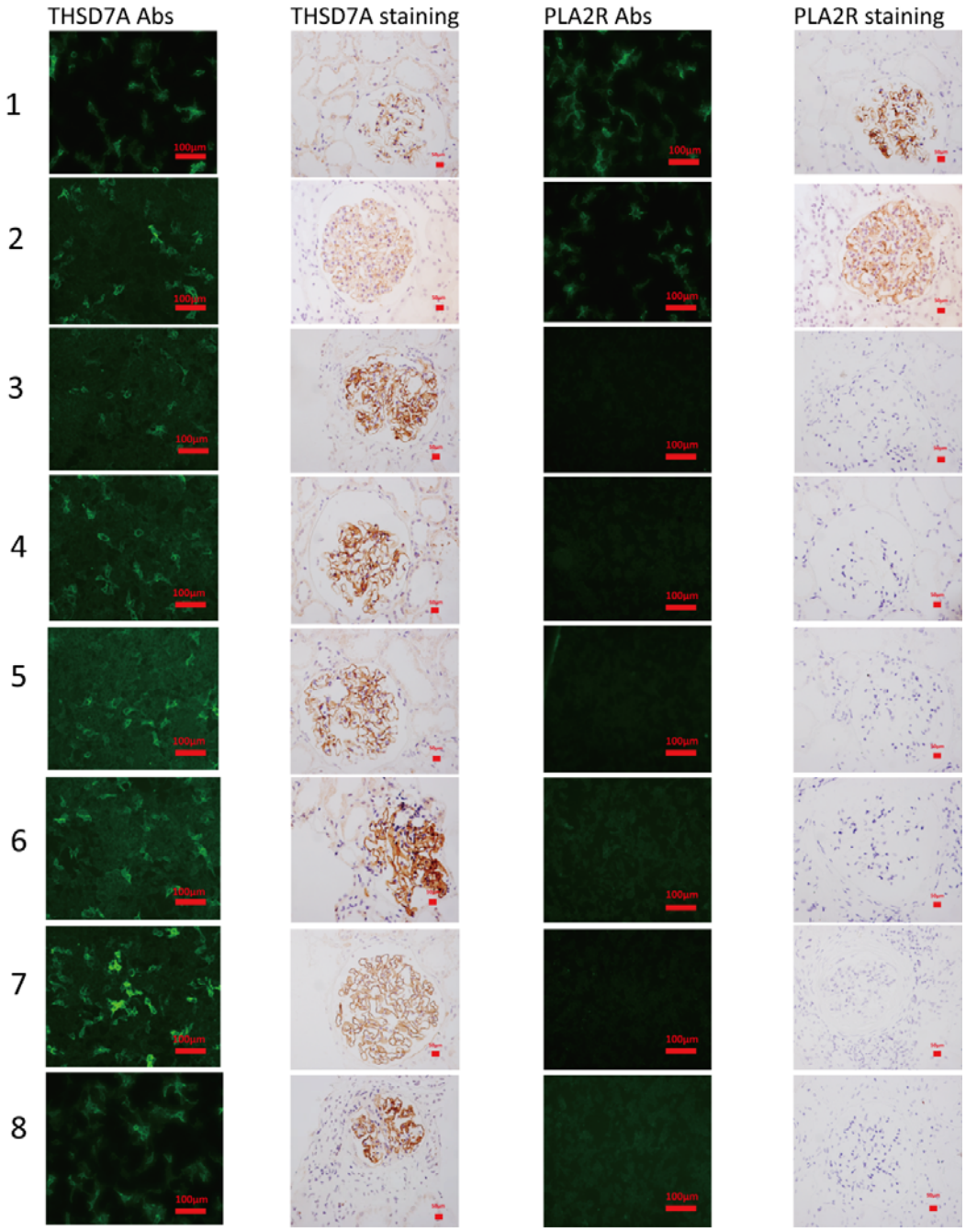
Supplementary Figure 2. Detection of the cross-reactivity between antibodies against PLA2R and THSD7A by inhibition ELISA (A) and immunofluorescence assay (B).

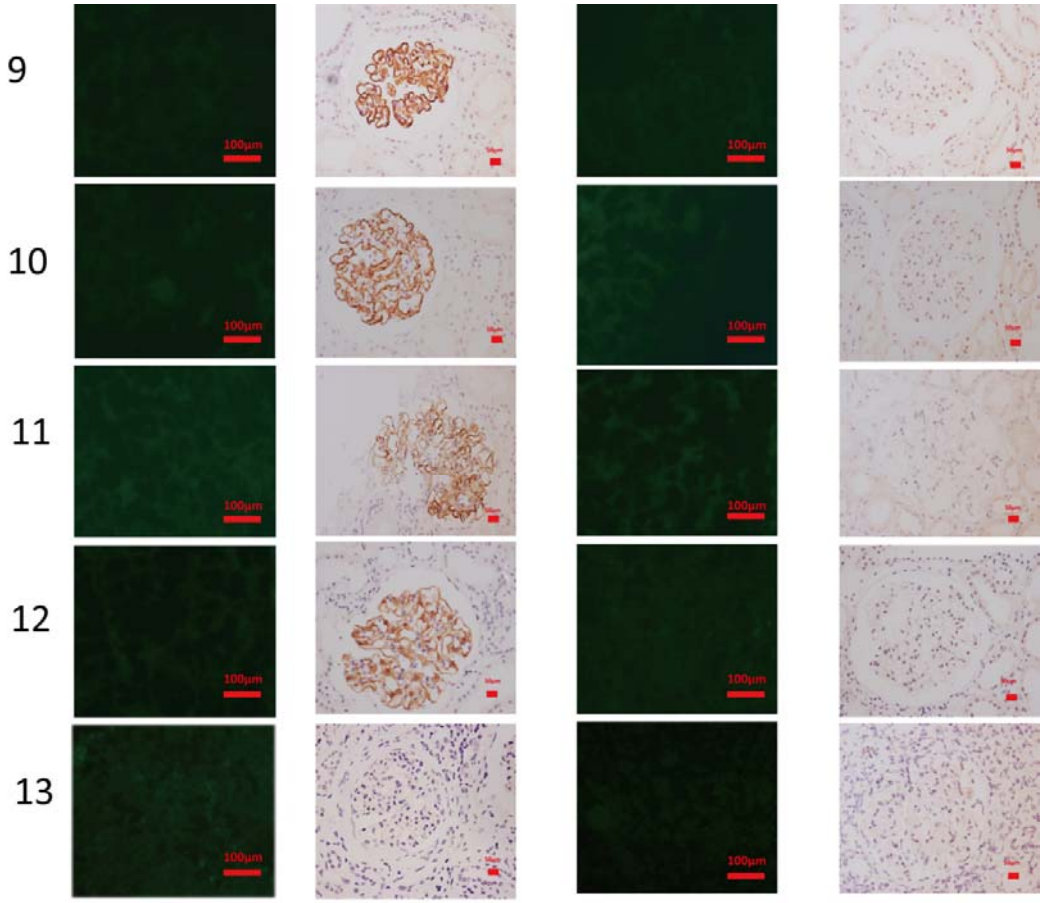




Plasma from patient with double positivity was pre-incubated with various concentrations of recombinant PLA2R or THSD7A in cell lysis buffer, and then reacted with PLA2R coated plate or THSD7A transfected cells. The binding to immobilized PLA2R was inhibited by pre-incubation with PLA2R but not by pre-incubation with THSD7A (A). The binding to THSD7A was inhibited by pre-incubation with THSD7A but not by pre-incubation with PLA2R (B). The results suggest absence of cross-reactivity between antibodies against PLA2R and THSD7A.

Supplementary Figure 3. Circulating anti-THSD7A antibodies and glomerular expression of THSD7A in twelve patients with iMN.





Line 1 to 12 shows the results of 12 patients. All of them presented with enhanced expression of THSD7A in glomeruli and the first eight patients had positive anti-THSD7A antibodies. Line 13 is a negative control. Column one presents the detection of circulating anti-THSD7A antibodies by immunofluorescence (×200). Column two presents the glomerular expression of THSD7A by immunohistochemistry (×400). Column three presents the detection of circulating anti-PLA2R antibodies by immunofluorescence (×200). Patients 1 and 2 were positive; other patients were negative. Column four presents the glomerular expression of PLA2R by immunohistochemistry

(×400). Patients 1 and 2 were positive; other patients were negative.