Electronic Supplementary Material (ESI) for New Journal of Chemistry.

18 α-Glycyrrhetinic Acid Aggregation-Induced Emission Probes for Visual Fluorescence Detection of Explosive as well Multi-functional Application

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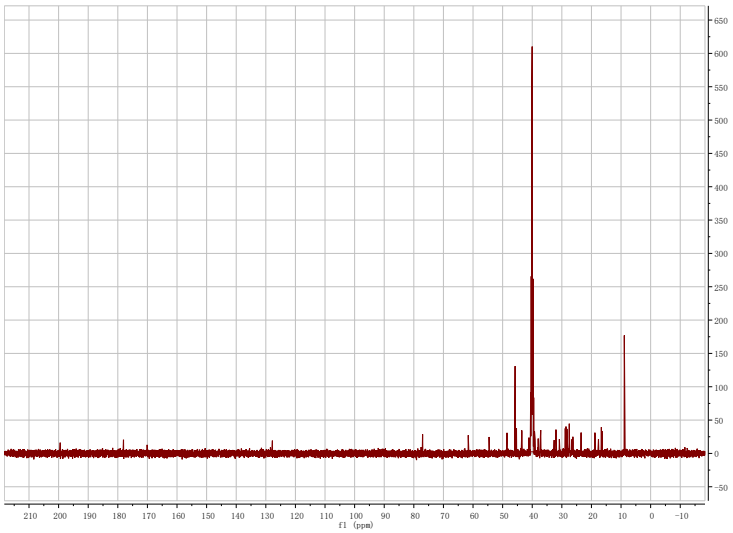

Fig. S1. ^{13}C NMR spectrum of compound TGL1 in *d*-DMSO.

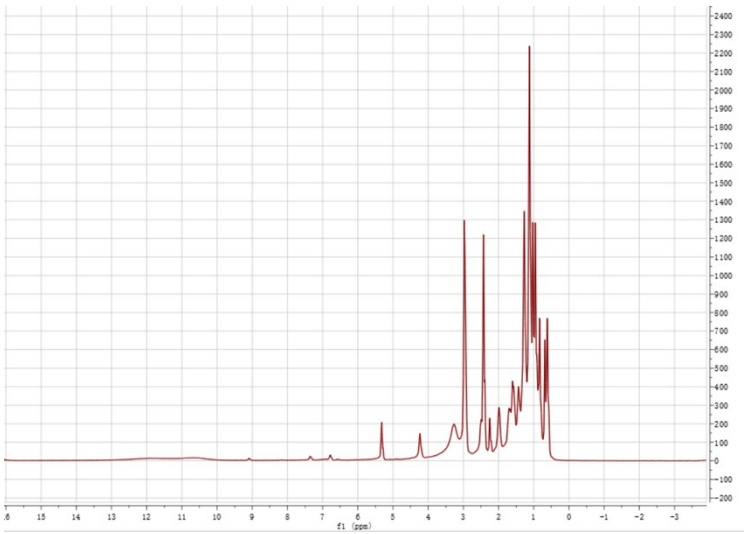

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Fig. S2. ^{1}H NMR spectrum of compound TGL1 in *d*-DMSO.

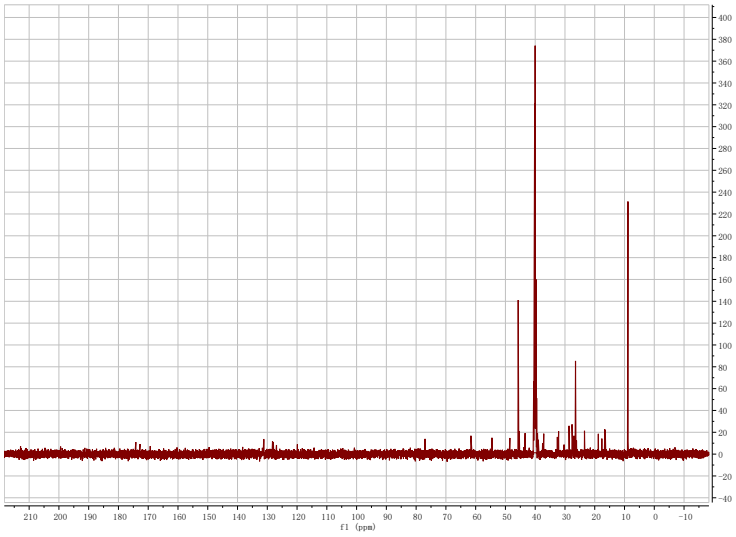

Fig. S3. ^{13}C NMR spectrum of compound TGL2 in *d*-DMSO.

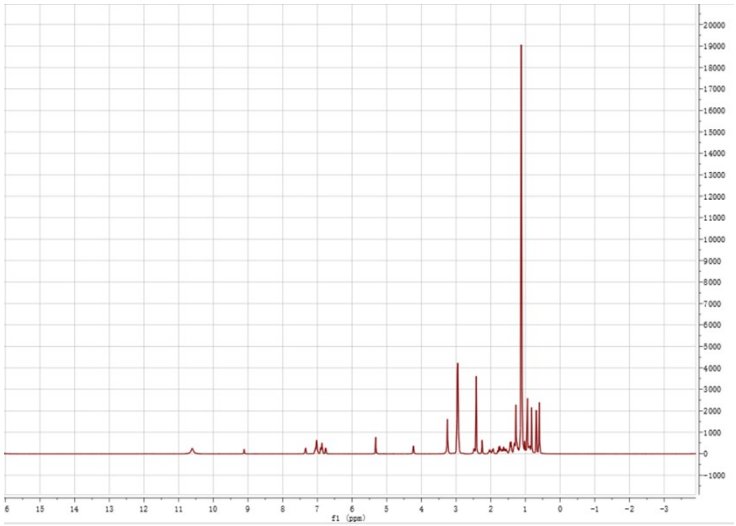

Fig. S4. ^{1}H NMR spectrum of compound TGL2 in *d*-DMSO.

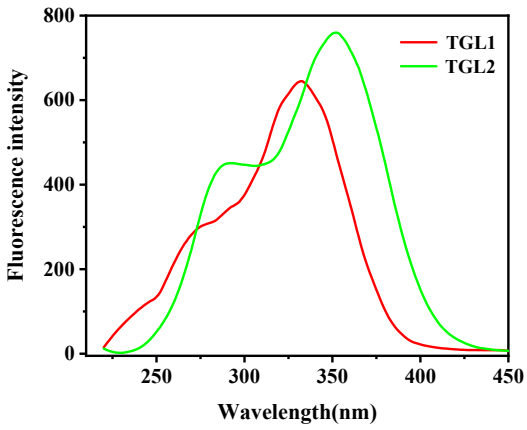

Fig. S5. The excitation spectra of the probes in DMSO/H_2O (1:9, v/v).

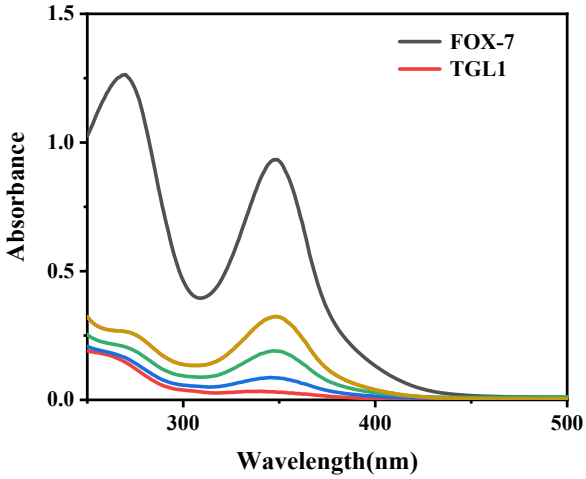

Fig. S6. The change of the UV-visible absorption of TGL1 in DMSO/H_2O (1:9, v/v) with the increase of FOX-7, Concentration: 10^{-5}M.

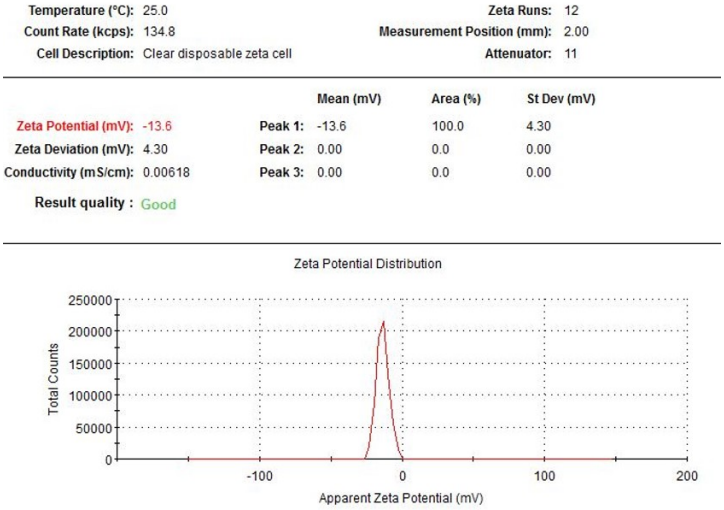

Fig. S7. The zeta potential distribution of TGL1**.**

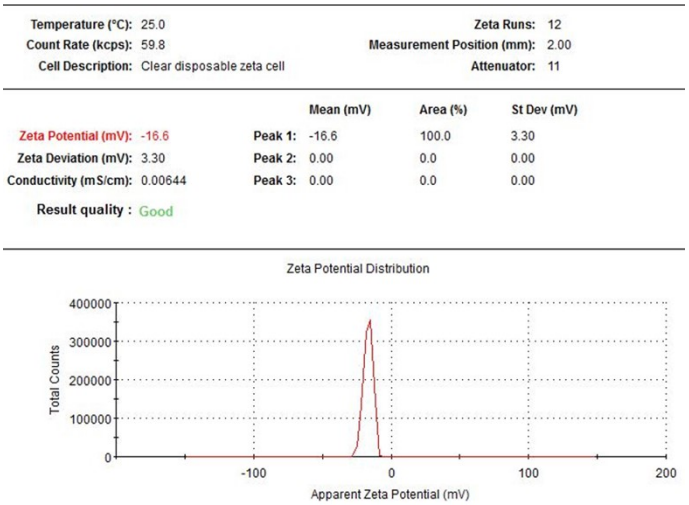

Fig. S8. The zeta potential distribution of TGL2**.**

Temperature (°C):	25.0	Zeta Runs:	13
Count Rate (kcps):	117.4	Measurement Position (mm):	2.00
Cell Description:	Clear disposable zeta cell	Attenuator:	10

		Mean (mV)	Area (%)	St Dev (mV)
Zeta Potential (mV):	-2.54	Peak 1:	-2.54	100.0	2.90
Zeta Deviation (mV):	2.90	Peak 2:	0.00	0.0	0.00
Conductivity (mS/cm):	0.00232	Peak 3:	0.00	0.0	0.00

Result quality : Good

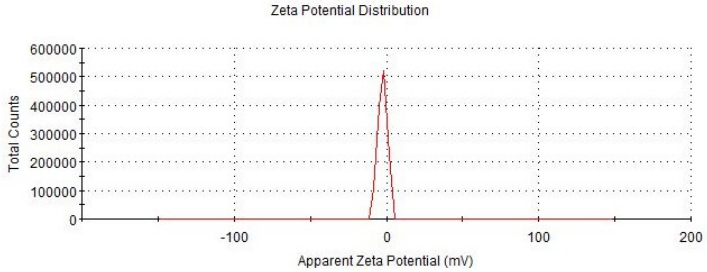

Fig. S9. The zeta potential distribution of FOX-7.

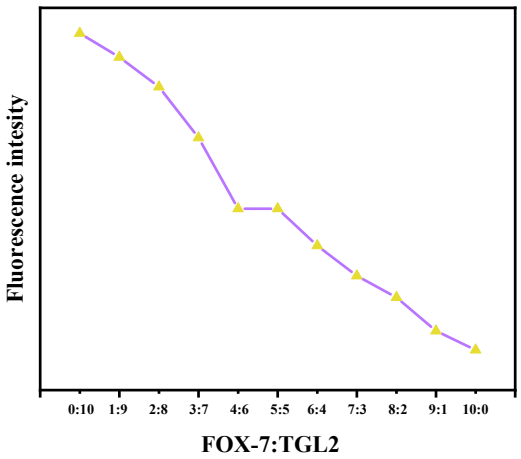

Fig. S10. Job's plot of compound TGL1 with FOX-7 (TGL1+FOX-7=1×10^{-5}M) in DMSO/H_2O (1:9, v/v).

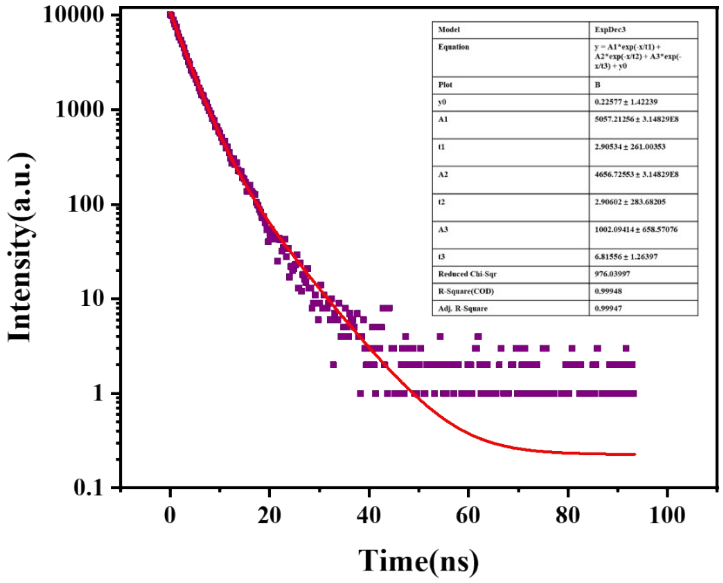

Fig. S11. Lifetime decay profiles of TGL1.

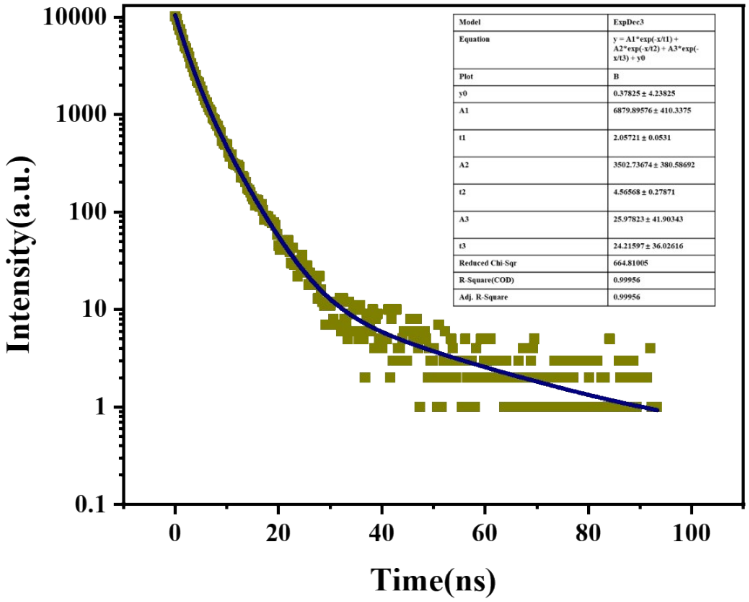

Fig. S12. Lifetime decay profiles of TGL2.

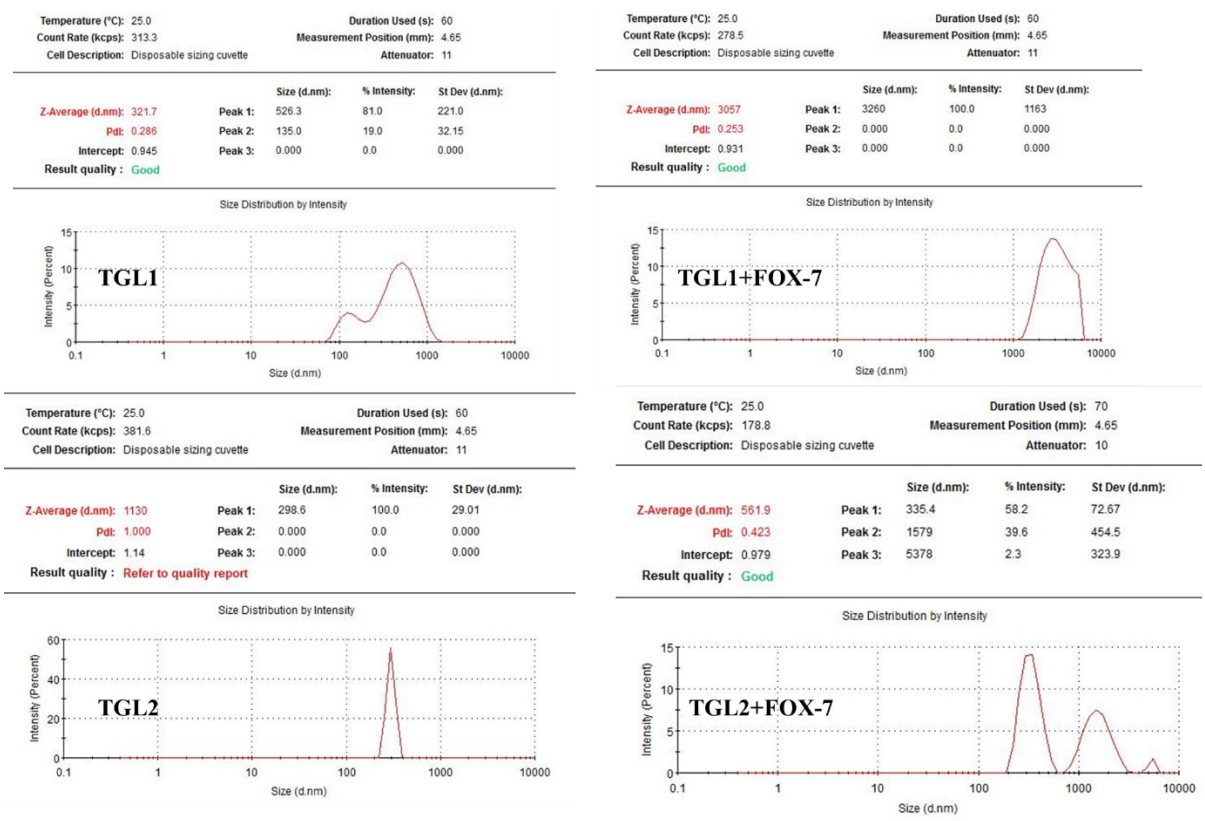

Fig. S13. Probes particle size in the presence or absence of FOX-7. (DMSO/H_2O=1:9, 10^{-5}M)

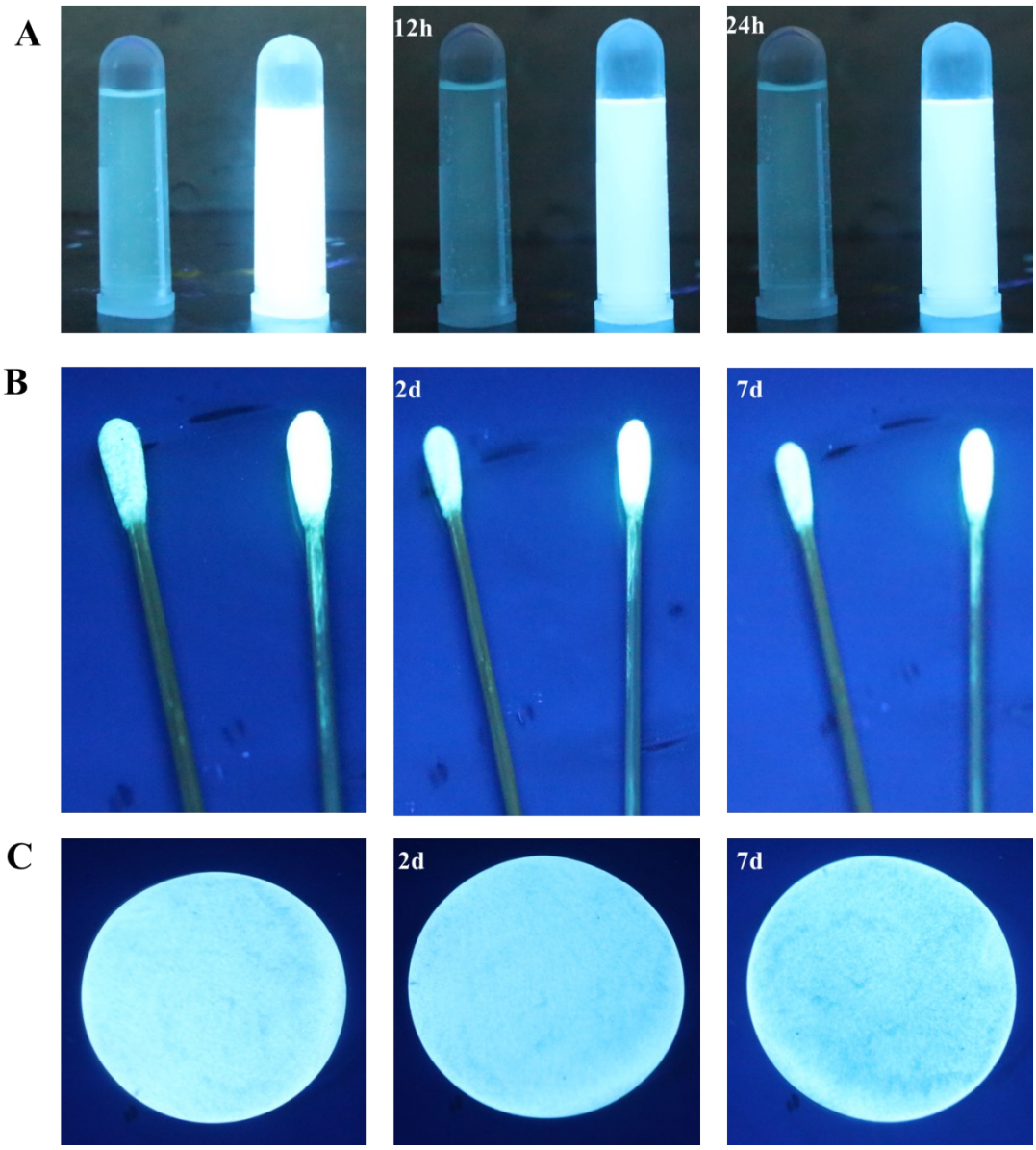

Fig. S14. (A) Images of probes in DMSO/H_2O mixtures with f_w of 90% , Concentration: 10^{-5}M. Left: TGL1; Right: TGL2. (B): Cotton swabs treated with TGL1 solution. (C): Filter paper treated with TGL1 solution.

Table S1

Probe solutions with different water content (10^{-5}M).

f_w(vol%)	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
Probes solution(10^{-3}M) μL	50	50	50	50	50	50	50	50	50	50
Deionized water μL	0	500	1000	1500	2000	2500	3000	3500	4000	4500

DMSO µL	4950	4450	3950	3450	2950	2450	1950	1450	950	450

Table S2

Comparison between present method and other fluorescent nano-sensing methods mentioned in the introduction.

Refs	**Analyte**	**LOD**	**Quenching constant**
2	TNT	0.3ppm	—
3	Teryl	1×10^{-4} M	—
4	TNP	—	$0.26\times10^{5}M^{-1}$
5	TNT,DNT	—	—
16	TNP	8×10^{-7} M	—
20	TNP	5×10^{-4} M	4.4×10^{5} M^{-1}
21	TNP	1×10^{-5} M	6.8×10^{5} M^{-1}
22	TNP	5×10^{-3} M	0.3×10^{5} M^{-1}
28	NB	1.11ppm	0.87×10^{5} M^{-1}
29	TNP	5ppm	0.53×10^{5} M^{-1}
30	TNT	—	0.75×10^{5} M^{-1}
31	TNP	0.6ppm	3.5×10^{5} M^{-1}
34	FOX-7	1.9×10^{-4} M	—
37	TNP	1.8×10^{-3} M	0.56×10^{5} M^{-1}
38	TNP	7.26×10^{-5}M	—
40	TNP	—	0.15×10^{5} M^{-1}
41	TNT	—	0.85×10^{5} M^{-1}
TGL1	FOX-7	2.32×10^{-6} M	1.05×10^{5} M^{-1}
TGL2	FOX-7	5.76×10^{-7} M	4.22×10^{5} M^{-1}