Supplementary information

Title: Improvement of a rapid diagnostic application of monoclonal antibodies against avian influenza H7 subtype virus using Europium nanoparticles

Authors

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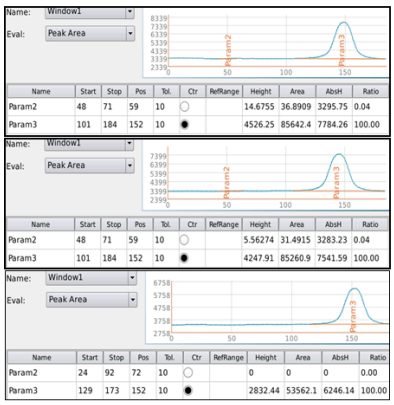
Figures

A

0 HAU/mL

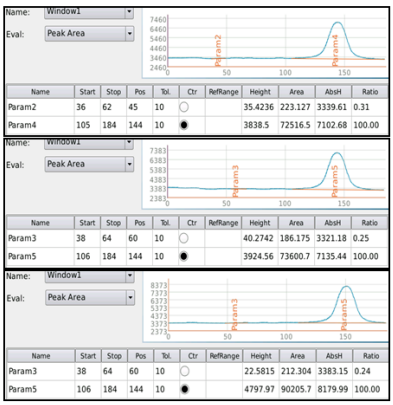


Name	Start	Stop	Pos	Tol.	Ctr	RefRange	Height	Area	AbsH	Ratio
Param2	48	71	59	10	○		14.6755	36.8909	3295.75	0.04
Param3	101	184	152	10	●		4526.25	85642.4	7784.26	100.00

Name	Start	Stop	Pos	Tol.	Ctr	RefRange	Height	Area	AbsH	Ratio
Param2	48	71	59	10	○		5.56274	31.4915	3283.23	0.04
Param3	101	184	152	10	●		4247.91	85260.9	7541.59	100.00

Name	Start	Stop	Pos	Tol.	Ctr	RefRange	Height	Area	AbsH	Ratio
Param2	24	92	72	10	○		0	0	0	0.00
Param3	129	173	152	10	●		2832.44	53562.1	6246.14	100.00

H7N1 5 HAU/mL

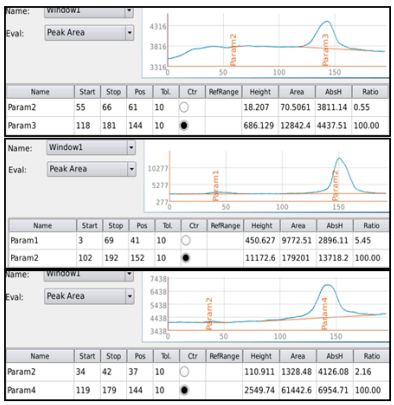


Name	Start	Stop	Pos	Tol.	Ctr	RefRange	Height	Area	AbsH	Ratio
Param2	36	62	45	10	○		35.4236	223.127	3339.61	0.31
Param4	105	184	144	10	●		3838.5	72516.5	7102.68	100.00

Name	Start	Stop	Pos	Tol.	Ctr	RefRange	Height	Area	AbsH	Ratio
Param3	38	64	60	10	○		40.2742	186.175	3321.18	0.25
Param5	106	184	144	10	●		3924.56	73600.7	7135.44	100.00

Name	Start	Stop	Pos	Tol.	Ctr	RefRange	Height	Area	AbsH	Ratio
Param3	38	64	60	10	○		22.5815	212.304	3383.15	0.24
Param5	106	184	144	10	●		4797.97	90205.7	8179.99	100.00

H7N1 10HAU/mL

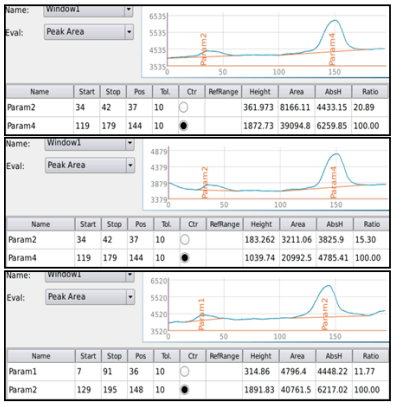


Name	Start	Stop	Pos	Tol.	Ctr	RefRange	Height	Area	AbsH	Ratio
Param2	55	66	61	10	○		18.207	70.5061	3811.14	0.55
Param3	118	181	144	10	●		686.129	12842.4	4437.51	100.00

Name	Start	Stop	Pos	Tol.	Ctr	RefRange	Height	Area	AbsH	Ratio
Param1	3	69	41	10	○		450.627	9772.51	2896.11	5.45
Param2	102	192	152	10	●		11172.6	179201	13718.2	100.00

Name	Start	Stop	Pos	Tol.	Ctr	RefRange	Height	Area	AbsH	Ratio
Param2	34	42	37	10	○		110.911	1328.48	4126.08	2.16
Param4	119	179	144	10	●		2549.74	61442.6	6954.71	100.00

H7N1 20HAU/mL

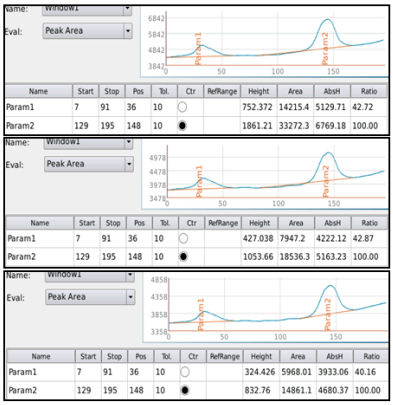


Name	Start	Stop	Pos	Tol.	Ctr	RefRange	Height	Area	AbsH	Ratio
Param2	34	42	37	10	○		361.973	8166.11	4433.15	20.89
Param4	119	179	144	10	●		1872.73	39094.8	6259.85	100.00

Name	Start	Stop	Pos	Tol.	Ctr	RefRange	Height	Area	AbsH	Ratio
Param2	34	42	37	10	○		183.262	3211.06	3825.9	15.30
Param4	119	179	144	10	●		1039.74	20992.5	4785.41	100.00

Name	Start	Stop	Pos	Tol.	Ctr	RefRange	Height	Area	AbsH	Ratio
Param1	7	91	36	10	○		314.86	4796.4	4448.22	11.77
Param2	129	195	148	10	●		1891.83	40761.5	6217.02	100.00

H7N1 40HAU/mL

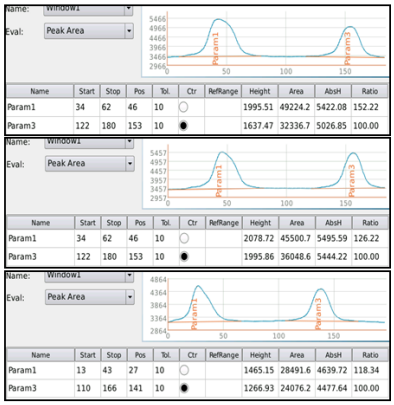


Name	Start	Stop	Pos	Tol.	Ctr	RefRange	Height	Area	AbsH	Ratio
Param1	7	91	36	10	○		752.372	14215.4	5129.71	42.72
Param2	129	195	148	10	●		1861.21	33272.3	6769.18	100.00

Name	Start	Stop	Pos	Tol.	Ctr	RefRange	Height	Area	AbsH	Ratio
Param1	7	91	36	10	○		427.038	7947.2	4222.12	42.87
Param2	129	195	148	10	●		1053.66	18536.3	5163.23	100.00

Name	Start	Stop	Pos	Tol.	Ctr	RefRange	Height	Area	AbsH	Ratio
Param1	7	91	36	10	○		324.426	5968.01	3933.06	40.16
Param2	129	195	148	10	●		832.76	14861.1	4680.37	100.00

H7N1 80HAU/mL

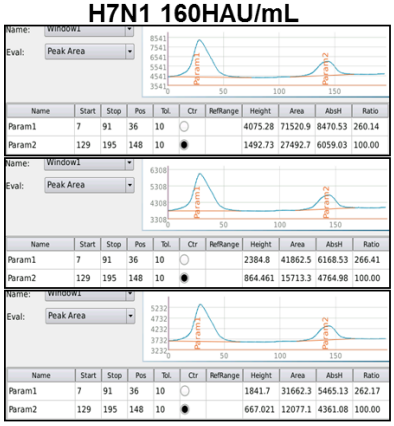


Name	Start	Stop	Pos	Tol.	Ctr	RefRange	Height	Area	AbsH	Ratio
Param1	34	62	46	10	○		1995.51	49224.2	5422.08	152.22
Param3	122	180	153	10	●		1637.47	32336.7	5026.85	100.00

Name	Start	Stop	Pos	Tol.	Ctr	RefRange	Height	Area	AbsH	Ratio
Param1	34	62	46	10	○		2078.72	45500.7	5495.59	126.22
Param3	122	180	153	10	●		1995.86	36048.6	5444.22	100.00

Name	Start	Stop	Pos	Tol.	Ctr	RefRange	Height	Area	AbsH	Ratio
Param1	13	43	27	10	○		1465.15	28491.6	4639.72	118.34
Param3	110	166	141	10	●		1266.93	24076.2	4477.64	100.00

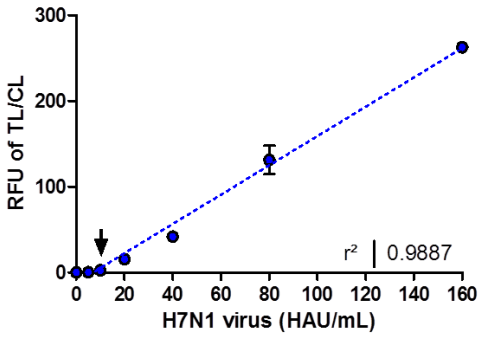
H7N1 160HAU/mL



Name	Start	Stop	Pos	Tol.	Ctr	RefRange	Height	Area	AbsH	Ratio
Param1	7	91	36	10	○		4075.28	71520.9	8470.53	260.14
Param2	129	195	148	10	●		1492.73	27492.7	6059.03	100.00

Name	Start	Stop	Pos	Tol.	Ctr	RefRange	Height	Area	AbsH	Ratio
Param1	7	91	36	10	○		2384.8	41862.5	6168.53	266.41
Param2	129	195	148	10	●		864.461	15713.3	4764.98	100.00

Name	Start	Stop	Pos	Tol.	Ctr	RefRange	Height	Area	AbsH	Ratio
Param1	7	91	36	10	○		1841.7	31662.3	5465.13	262.17
Param2	129	195	148	10	●		667.021	12077.1	4361.08	100.00



B

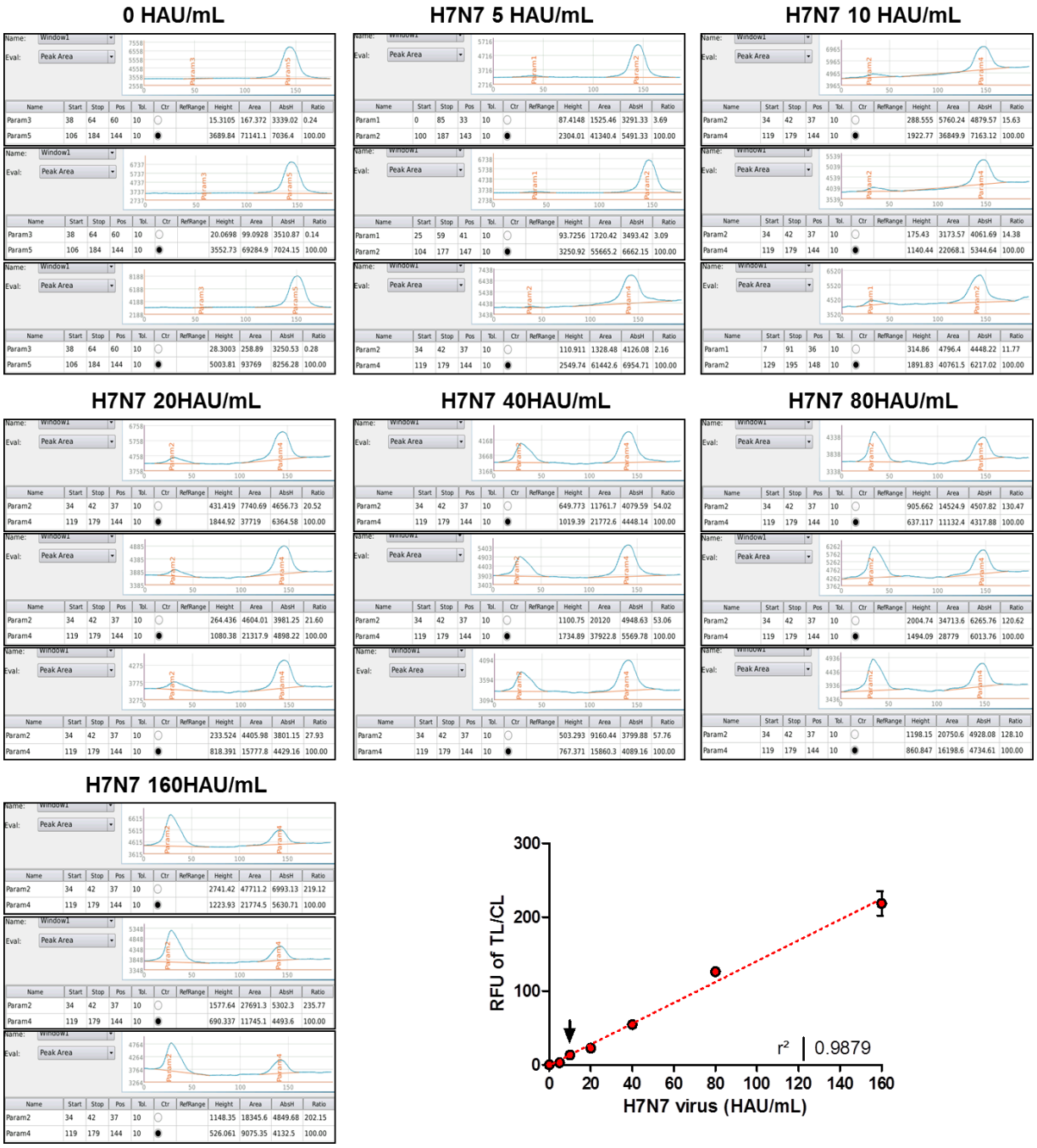
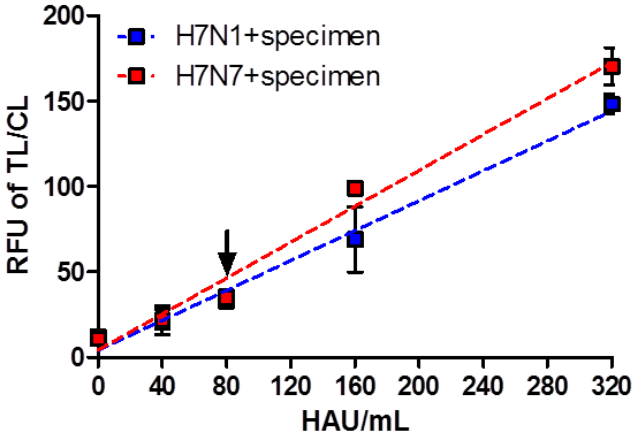


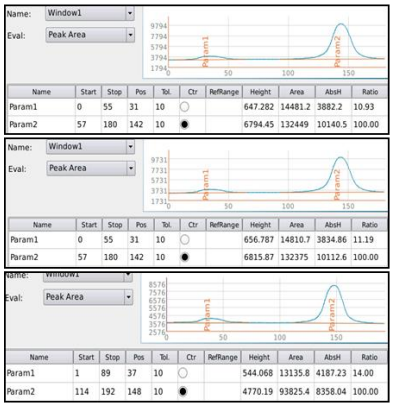
Figure S1. Effect of Europium nanoparticle on FICT targeting influenza A NP. Anti-influenza NP (3G6) was conjugated with Eu NP and tested in the strip which was coated with anti-influenza NP (Medix Biochemica Inc., Espoo, Finland). Serial dilutions of a virus stock in DW were tested in the FICT assay for H7N1 (**A**) and H7N7 (**B**). Arrow indicates the LOD.

A



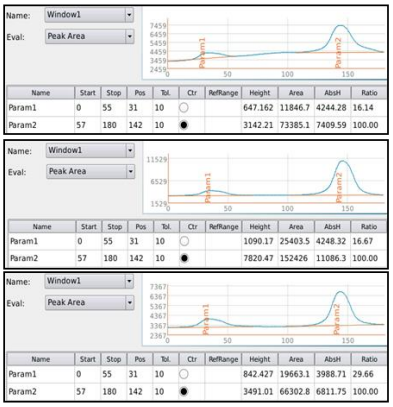
B

0 HAU/mL



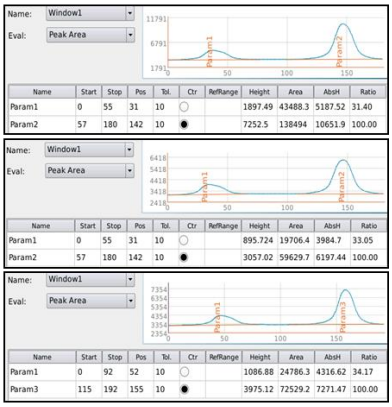
Name	Start	Stop	Pos	Tol.	Ctr	RefRange	Height	Area	AbsH	Ratio
Param1	0	55	31	10	○		647.282	14481.2	3882.2	10.93
Param2	57	180	142	10	●		6794.45	132449	10140.5	100.00
Param1	0	55	31	10	○		656.787	14810.7	3834.86	11.19
Param2	57	180	142	10	●		6815.87	132375	10112.6	100.00
Param1	1	89	37	10	○		544.068	13135.8	4187.23	14.00
Param2	114	192	148	10	●		4770.19	93825.4	8358.04	100.00

H7N1 40 HAU/mL



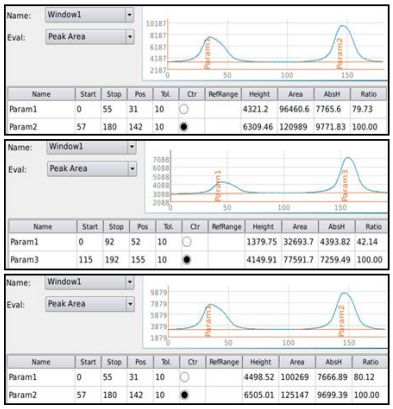
Name	Start	Stop	Pos	Tol.	Ctr	RefRange	Height	Area	AbsH	Ratio
Param1	0	55	31	10	○		647.162	11846.7	4244.28	16.14
Param2	57	180	142	10	●		3142.21	73385.1	7409.59	100.00
Param1	0	55	31	10	○		1090.17	25403.5	4248.32	16.67
Param2	57	180	142	10	●		7820.47	152426	11086.3	100.00
Param1	0	55	31	10	○		842.427	19663.1	3988.71	29.66
Param2	57	180	142	10	●		3491.01	66302.8	6811.75	100.00

H7N1 80 HAU/mL



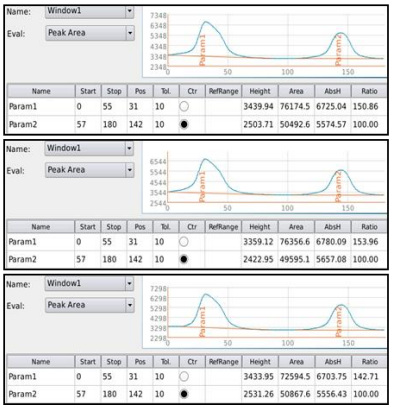
Name	Start	Stop	Pos	Tol.	Ctr	RefRange	Height	Area	AbsH	Ratio
Param1	0	55	31	10	○		1897.49	43488.3	5187.52	31.40
Param2	57	180	142	10	●		7252.5	138494	10651.9	100.00
Param1	0	55	31	10	○		895.724	19706.4	3984.7	33.05
Param2	57	180	142	10	●		3057.02	59629.7	6197.44	100.00
Param1	0	92	52	10	○		1086.88	24786.3	4316.62	34.17
Param3	115	192	155	10	●		3975.12	72529.2	7271.47	100.00

H7N1 160 HAU/mL



Name	Start	Stop	Pos	Tol.	Ctr	RefRange	Height	Area	AbsH	Ratio
Param1	0	55	31	10	○		4321.2	96460.6	7765.6	79.73
Param2	57	180	142	10	●		6309.46	120989	9771.83	100.00
Param1	0	92	52	10	○		1379.75	32693.7	4393.82	42.14
Param3	115	192	155	10	●		4149.91	77591.7	7259.49	100.00
Param1	0	55	31	10	○		4498.52	100269	7666.89	80.12
Param2	57	180	142	10	●		6505.01	125147	9699.39	100.00

H7N1 320 HAU/mL



Name	Start	Stop	Pos	Tol.	Ctr	RefRange	Height	Area	AbsH	Ratio
Param1	0	55	31	10	○		3439.94	76174.5	6725.04	150.86
Param2	57	180	142	10	●		2503.71	50492.6	5574.57	100.00
Param1	0	55	31	10	○		3359.12	76356.6	6780.09	153.96
Param2	57	180	142	10	●		2422.95	49595.1	5657.08	100.00
Param1	0	55	31	10	○		3433.95	72594.5	6703.75	142.71
Param2	57	180	142	10	●		2531.26	50867.6	5556.43	100.00

C

Figure S2. Performance of FICT to detect H7 subtype virus in clinical specimen. Virus was mixed in 1:100 ratio with human nasopharyngeal specimen instead of DW and tested in FICT (**A**). Raw FICT data showed the serial dilutions were tested in the FICT assay employing H7 subtype-specific antibodies (6D7/2F4) for H7N1 (**B**) and H7N7 (**C**). Arrow indicates the LOD.