

## SUPPLEMENTS

Table 1. Clinical characterized sample information

Sample Groups	Number of samples	Female (%)	Age (years) Median (range)
Systemic Lupus Erythematosus	217	90%	38.3 (18 – 79)
Disease controls	54	87%	42.5 (18 – 81)
Apparently healthy controls	139	66.2%	44.1 (23 – 79)

Table 2. Total and HA anti-dsDNA EIA discrepant samples

Sample Group	Sample ID	Total anti-dsDNA IgG EIA (cutoff: 19.8 IU/mL)	HA anti-dsDNA IgG EIA (cutoff: 18.5 IU/mL)	Kallestad anti-dsDNA IgG & IgM EIA (cutoff: 30 IU/mL)	BioPlex anti-dsDNA IgG (cutoff: 10 IU/mL)	Kallestad CLIFT (cutoff 1:10)	M-SLEDAI
SLE	ANA283	20.51	15.24	19.48	7.1	negative	0
	ANA268	21.99	10.53	19.57	4.0	negative	0
	ANA266	24.45	0.00	18.54	8.0	negative	0
	ANA394	27.49	6.13	45.71	5.0	negative	0
	ANA265	31.27	14.87	33.47	5.4	negative	0
	ANA319	32.34	7.60	8.73	3.0	negative	0
	ANA269	34.81	7.56	16.99	5.0	negative	0
	ANA330	41.54	11.08	30.16	7.0	negative	0
	ANA219	43.40	7.60	22.10	2.0	negative	0
	ANA236	51.82	9.44	13.40	2.0	negative	0
	ANA284	55.29	17.33	116.74	10.0	positive	0
	ANA267	68.08	11.66	42.99	4.0	negative	0
	ANA264	26.07	8.17	40.18	1.2	negative	1
	ANA243	27.21	4.93	21.22	7.0	negative	1
	ANA235	122.59	9.55	111.86	7.6	negative	1
	ANA262	21.51	1.60	5.71	1.0	negative	2
	ANA250	73.24	13.03	54.22	8.0	negative	2
	ANA335	17.77	18.95	15.31	2.0	negative	3
	ANA228	23.51	13.64	24.48	21.0	negative	3
	ANA391	20.19	17.62	16.35	7.3	negative	4
ANA211	20.33	5.59	35.43	25.0	negative	4	
ANA233	22.59	14.08	16.85	14.0	negative	4	
ANA340	67.92	11.27	25.44	12.0	negative	8	
Disease Control	ANA180	21.88	11.97	18.98	6.8	negative	NA
	ANA155	24.04	11.61	18.08	2.0	negative	NA
	ANA156	24.22	18.10	37.69	1.0	negative	NA
	ANA153	28.19	8.80	25.09	2.0	negative	NA
Healthy Control	ANA004	16.57	22.39	1.01	<1.0	negative	NA
	ANA033	20.71	5.26	20.90	3.1	negative	NA

Table 3. Total anti-dsDNA EIA kit precision

Sample ID	N	Mean (IU/mL)	Within run CV (%)	Between runs CV (%)	Between days CV (%)	Total CV (%)
Sample 1	60	205.38	7.09	4.86	4.82	9.85
Sample 2	60	110.40	7.40	1.21	5.89	9.46
Sample 3	60	61.23	7.57	1.91	7.97	11.16

Table 4. HA anti-dsDNA EIA kit precision

Sample ID	N	Mean (IU/mL)	Within run CV (%)	Between runs CV (%)	Between days CV (%)	Total CV (%)
Sample 1	60	222.51	6.67	0.52	4.30	7.95
Sample 2	60	121.76	6.04	0.96	1.47	6.29
Sample 3	60	67.65	8.51	3.18	5.40	10.57

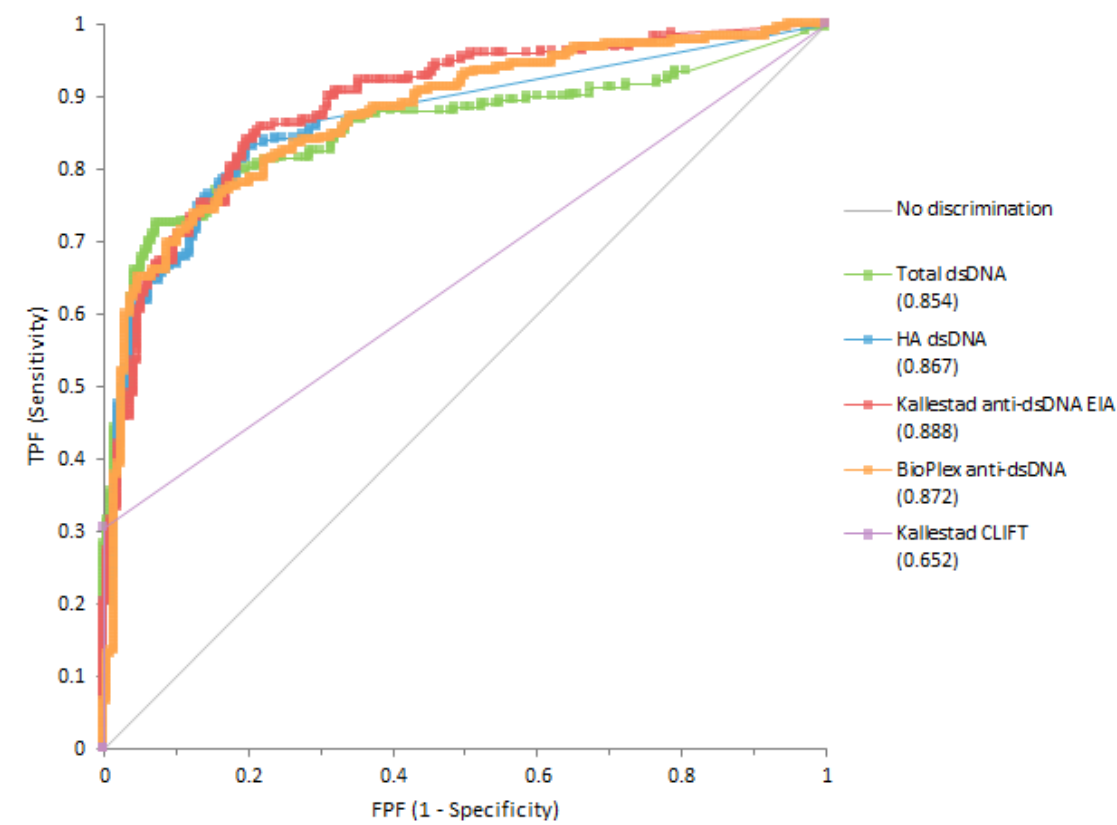
Table 5. The linearity of Total anti-dsDNA EIA kit

Dilution vials	High positive samples (mL)	Negative samples (mL)	Measured Mean (IU/mL)	Expected (IU/mL)	Difference (%)
1	1.000	0.000	562.0	562.0	0.0%
2	0.500	0.500	296.8	281.0	5.6%
3	0.250	0.750	153.3	140.5	9.1%
4	0.125	0.875	78.1	70.3	11.2%
5	0.065	0.935	37.4	35.1	6.6%
6	0.033	0.967	16.7	17.5	-4.6%
7	0.016	0.984	9.3	8.8	5.7%

Table 6. The linearity of HA anti-dsDNA EIA kit

Dilution vials	High positive samples (mL)	Negative samples (mL)	Measured Mean (IU/mL)	Expected (IU/mL)	Difference (%)
1	1.000	0.000	518.5	518.5	0.0%
2	0.500	0.500	236.8	259.3	-8.7%
3	0.250	0.750	115.3	129.6	-11.1%
4	0.125	0.875	59.6	64.8	-8.0%
5	0.065	0.935	28.7	32.4	-11.4%
6	0.033	0.967	13.9	16.2	-14.2%
7	0.016	0.984	7.8	8.1	-3.7%

Figure 1. ROC curve analysis of anti-dsDNA assays



	Present	Absent	Total
SLE	217	193	410

	AUC	95% CI	SE
Total dsDNA	0.854	0.816 to 0.893	0.0196
HA dsDNA	0.867	0.832 to 0.901	0.0174
Kallestad anti-dsDNA EIA	0.888	0.856 to 0.919	0.0162
BioPlex anti-dsDNA	0.872	0.837 to 0.906	0.0176
Kallestad CLIFT	0.652	0.621 to 0.683	0.0157

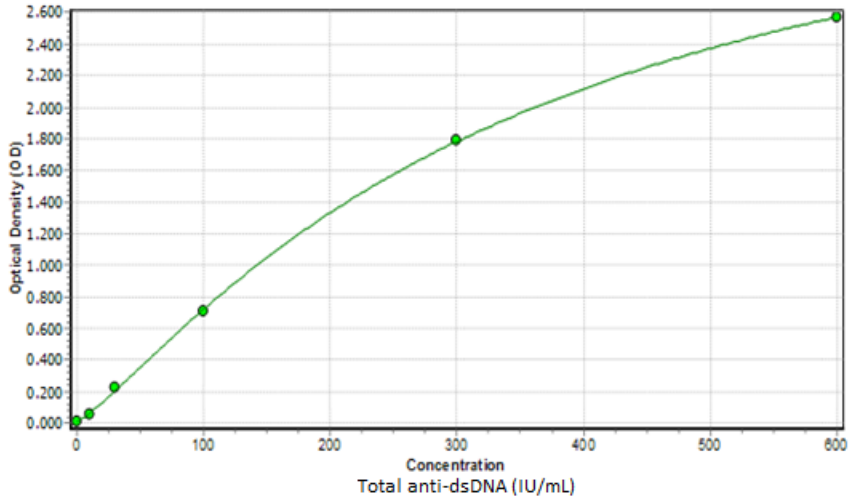
Figure 2. Total anti-dsDNA EIA calibration curve

Measurement Filter (nm): 450

Reference Filter (nm): 620

Method: Interpolation curve

4-Parameter Logistic S1 [ 0.000 ] S2 [ 10.000 ] S3 [ 30.000 ] S4 [ 100.000 ] S5 [ 300.000 ] S6 [ 600.000 ]



Standard	Total anti-dsdDNA (IU/mL)	OD (450 nm)
S1	0	0.021
S2	10	0.083
S3	30	0.240
S4	100	0.702
S5	300	1.803
S6	600	2.560

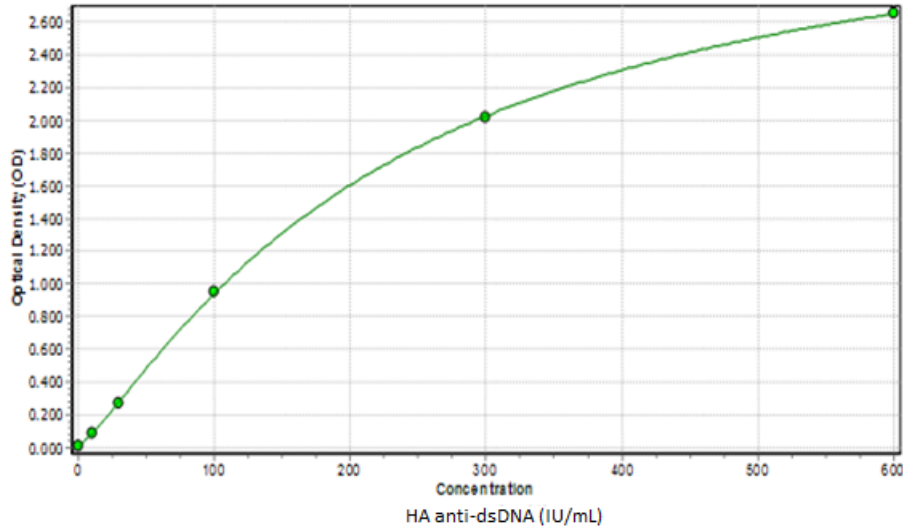
Figure 3: HA anti-dsDNA EIA calibration curve

Measurement Filter (nm): 450

Reference Filter (nm): 620

Method: Interpolation curve

4-Parameter Logistic S1 [ 0.000 ] S2 [ 10.000 ] S3 [ 30.000 ] S4 [ 100.000 ] S5 [ 300.000 ] S6 [ 600.000 ]



Standard	HA anti-dsdDNA (IU/mL)	OD (450 nm)
S1	0	0.025
S2	10	0.091
S3	30	0.280
S4	100	0.958
S5	300	2.040
S6	600	2.631