Project: ELISA paper project

Date: 20.05.2020

Performed by: Dorothy Smith

Approved by:

Test No.: 2

on: 25.05.2020 17:34

on:

Template:
Version: 1
Effective: 20.05.2020

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ELISA
Tool

Standard Operating Procedure of dataset validation
ELISA protocol for determination of antibodies

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Sample pipetting scheme

	Abbr	Description	Position
1	std1	Standard1 (0.0005 mg/mL)	C-4, C-5, C-6
2	std2	Standard2 (0.001 mg/mL)	F-4, F-5, F-6
3	std3	Standard3 (0.002 mg/mL)	A-7, A-8, A-9
4	std4	Standard4 (0.003 mg/mL)	C-7, C-8, C-9
5	std5	Standard5 (0.004 mg/mL)	F-7, F-8, F-9
6	std6	Standard6 (0.005 mg/mL)	D-10, D-11, D-12
7	std7	Standard7 (0.01 mg/mL)	
8	std8	Standard8 (0.015 mg/mL)	
9	std9	Standard9 (0.02 mg/mL)	
10	std10	Standard10 (0.025 mg/mL)	
11	std11	Standard11 (0.03 mg/mL)	
12	std12	Standard12 (0.04 mg/mL)	
13	std13	Standard13 (0.05 mg/mL)	
14	std14	Standard14 (0.06 mg/mL)	
15	std15	Standard15 (0.08 mg/mL)	
16	std16	Standard16 (0.1 mg/mL)	
17	std17	Standard17 (0.2 mg/mL)	
18	std18	Standard18 (0.3 mg/mL)	
19	std19	Standard19 (0.4 mg/mL)	
20	std20	Standard20 (0.5 mg/mL)	
21	std21	-	
22	std22	-	
23	std23	-	
24	std24	-	
25	std25	-	
26	std26	-	
27	std27	-	
28	std28	-	
29	std29	-	
30	std30	-	
31	sam1	-	A-1, A-2, A-3
32	sam2	-	B-7, B-8, B-9
33	sam25	-	
34	sam26	-	
35	sam27	-	
36	sam28	-	
37	sam29	-	
38	sam30	-	
39	sam31	-	
40	sam32	-	
41	sam33	-	
42	sam34	-	
43	sam35	-	
44	sam36	-	
45	sam37	-	
46	sam38	-	
47	sam39	-	
48	sam40	-	

Multiwell plate map

	1	2	3	4	5	6	7	8	9	10	11	12
A	BLQ	sam1	sam1	empty	empty	empty	std3	std3	std3	empty	empty	empty
B	empty	empty	empty	empty	empty	empty	sam2	sam2	sam2	empty	empty	empty
C	empty	empty	empty	std1	std1	std1	std4	std4	std4	empty	empty	empty
D	sam4	sam4	sam4	empty	empty	empty	sam3	sam3	sam3	std6	std6	std6
E	empty	empty	empty	empty	empty	empty	empty	empty	empty	empty	empty	empty
F	empty	empty	empty	std2	std2	std2	std5	std5	std5	empty	empty	empty
G	empty	empty	empty	empty	empty	empty	empty	empty	empty	sam5	sam5	sam5
H	empty	empty	empty	empty	empty	empty	empty	empty	empty	empty	empty	BLQ

Initial measurement results

	1	2	3	4	5	6	7	8	9	10	11	12
A	BLQ	0.1082	0.2991	0.1939	0.1828	0.17050	0.6505	0.7637	0.5210	1.2601	1.2463	1.1666
B	0.0476	0.0495	0.0507	0.2441	0.2514	0.24410	0.7130	0.8221	0.5766	1.3088	1.2625	1.1298
C	0.0823	0.0209	0.0511	0.1877	0.2897	0.39100	0.8218	0.9079	0.9711	1.1787	1.2468	1.1355
D	0.0809	0.0374	0.0574	0.3544	0.3363	0.35680	1.0577	1.1606	0.9585	1.2011	1.4123	1.2885
E	0.0715	0.0691	0.0713	0.3796	0.3438	0.37220	1.0464	1.0070	1.0465	1.2791	1.3068	1.3249
F	0.0872	0.0833	0.0862	0.5694	0.4298	0.32366	1.2113	1.1287	1.0285	1.2950	1.3729	1.331
G	0.0997	0.1028	0.0918	0.4690	0.5093	0.48490	1.1799	1.1708	1.1049	1.2815	1.2907	1.3055
H	0.1168	0.1169	0.1163	0.5439	0.5892	0.56420	1.2311	1.1618	1.1438	1.2415	1.3131	BLQ

Calibration standards

Std. name	Number	Absorbance	Conc.	Variation
std1	3	0.2895	0.02	0.08300
std2	3	0.4410	0.04	0.10063
std3	3	0.6451	0.08	0.09916
std4	3	0.9003	0.20	0.06119
std5	3	1.1228	0.50	0.07474
std6	3	1.3006	2.00	0.08665

Model: Logit 5PL diff_evol fitting in lin_lin system

$$\text{Absorbance} = D + ((A - D)/(1 + (\text{Conc}/C)^B)^E)$$

Model parameters

A= -0.034188, B= 0.771859, C= 0.145238, D= 1.385422, E= 1.313200

Model diagnostics

The Residual Sum of Squares **RSS** = 1.5e-05
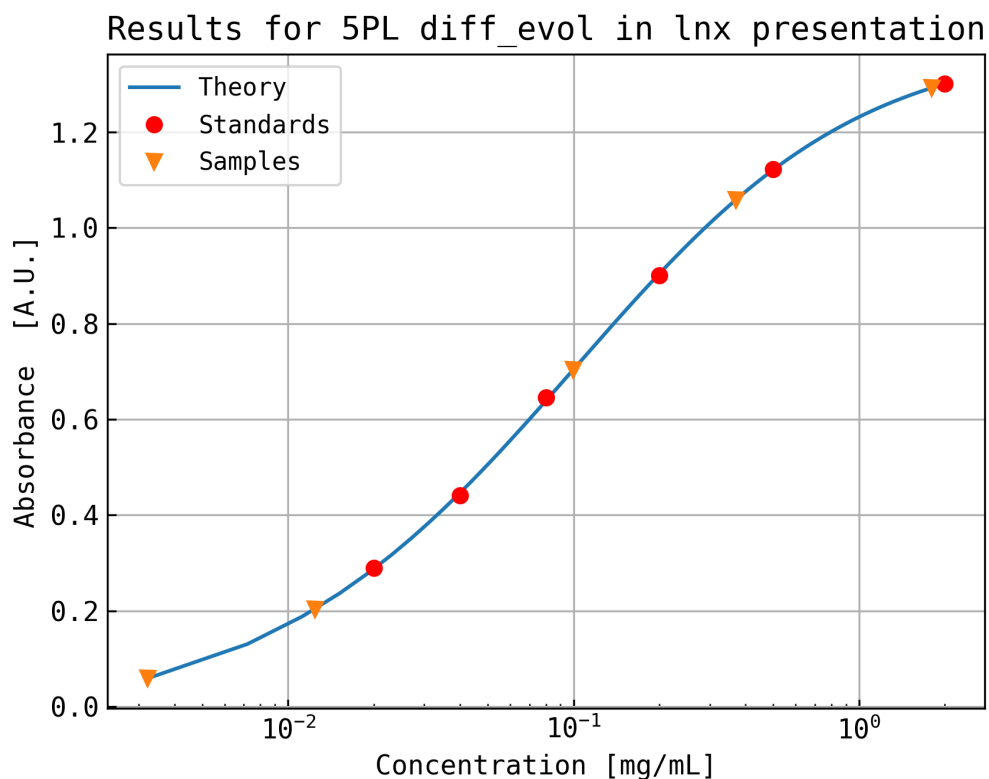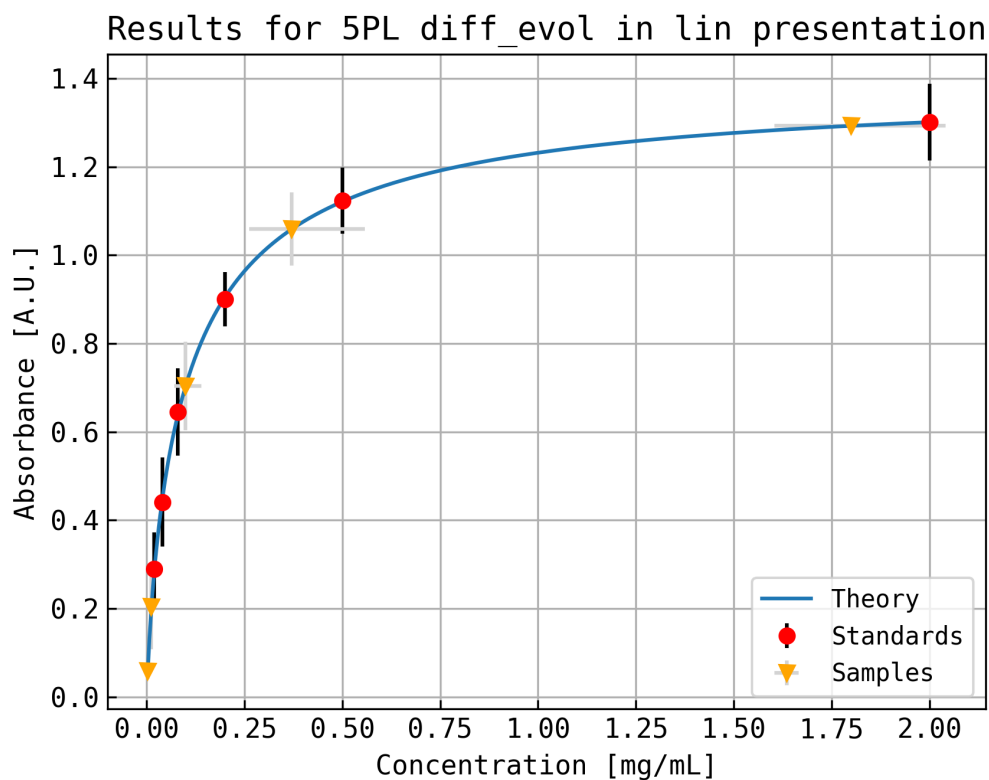
Coefficient of Determination $\mathbf{R}^2$ = 0.999884
Akaike Information Criterion **AIC** = -56.612297
Bayesian Information Criterion **BIC** = -57.6535
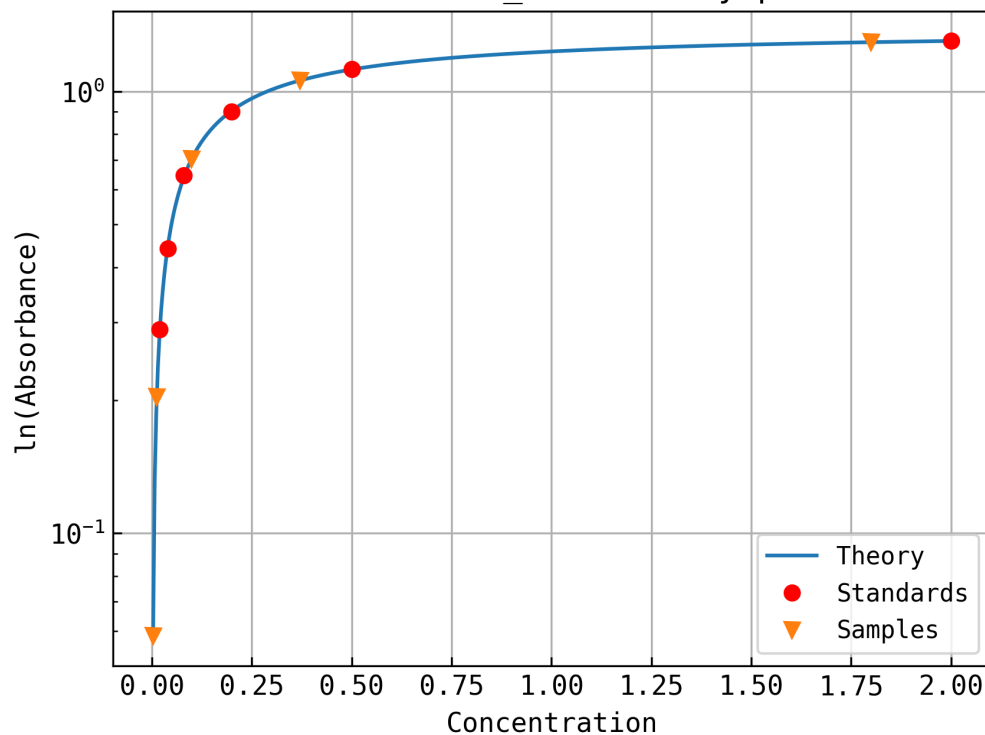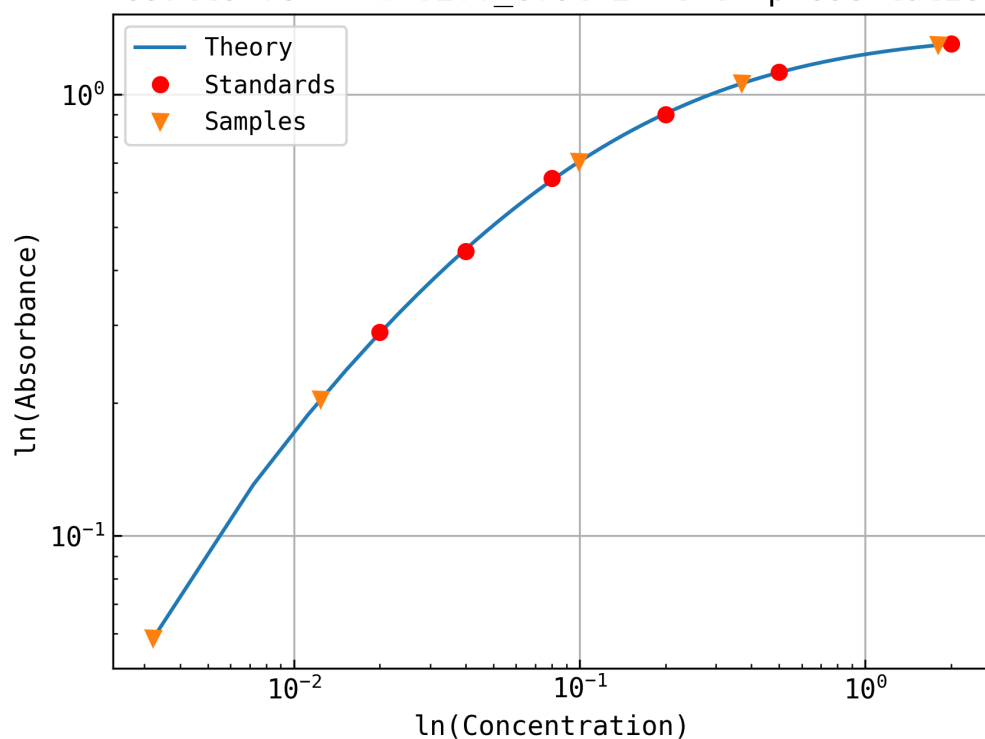Coefficient of Correlation **r** = 0.999942
Time of calculatin = 23.627 [s]

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Plots

Results for 5PL diff_evol in lin presentation

Results for 5PL diff_evol in lnx presentation

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Plots

Results for 5PL diff_evol in lny presentation

Results for 5PL diff_evol in lnln presentation

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Calculation results

Good Samples	Conc.	SD down Conc.	SD up Conc.	Absorbance	SD Abs.
sam1	0.012	0.00873	0.00657	0.20365	0.09545
sam2	0.100	0.04061	0.02893	0.70390	0.10043
sam3	0.371	0.18620	0.10840	1.05893	0.08251
sam4	0.003	0.00088	0.00081	0.05857	0.01778
sam5	1.800	0.24213	0.19514	1.29257	0.00989

BLQ samples

	Bad Sample	Comment
1	sam1	blq_1_1
2	empty	blq_8_12