

[multi_overview]

[wavelength_analysis]

ELISA Analysis Report

[wavelength_analysis]

ELISA Analysis Report

[wavelength_analysis]

ELISA Analysis Report

[overall_conclusions]

Multi-Wavelength Bioassay Analysis Report

Kristof Moeller (IAEA, Monaco) and Arnold Molina Porras (Universidad de Costa Rica)

[multi_overview]

[multi_overview_desc]

[multi_compare]

- [multi_benefit1]
- [multi_benefit2]
- [multi_benefit3]

[multi_sections]

- [multi_exec_summary]
- [multi_detailed]

[exec_summary_title]

[wavelength_analysis]

[analysis_n_of]

ELISA Analysis Report

Assay Type: ELISA

Analysis Date: 2026-02-10

Analyst: MOELLERKR

This report analyzes ELISA data using a four-parameter logistic dose–response curve to estimate concentrations of cortisol in unknown samples.

Method: Competitive enzyme-linked immunosorbent assay with %B/B0 normalization

Analysis Notes

No additional notes provided.

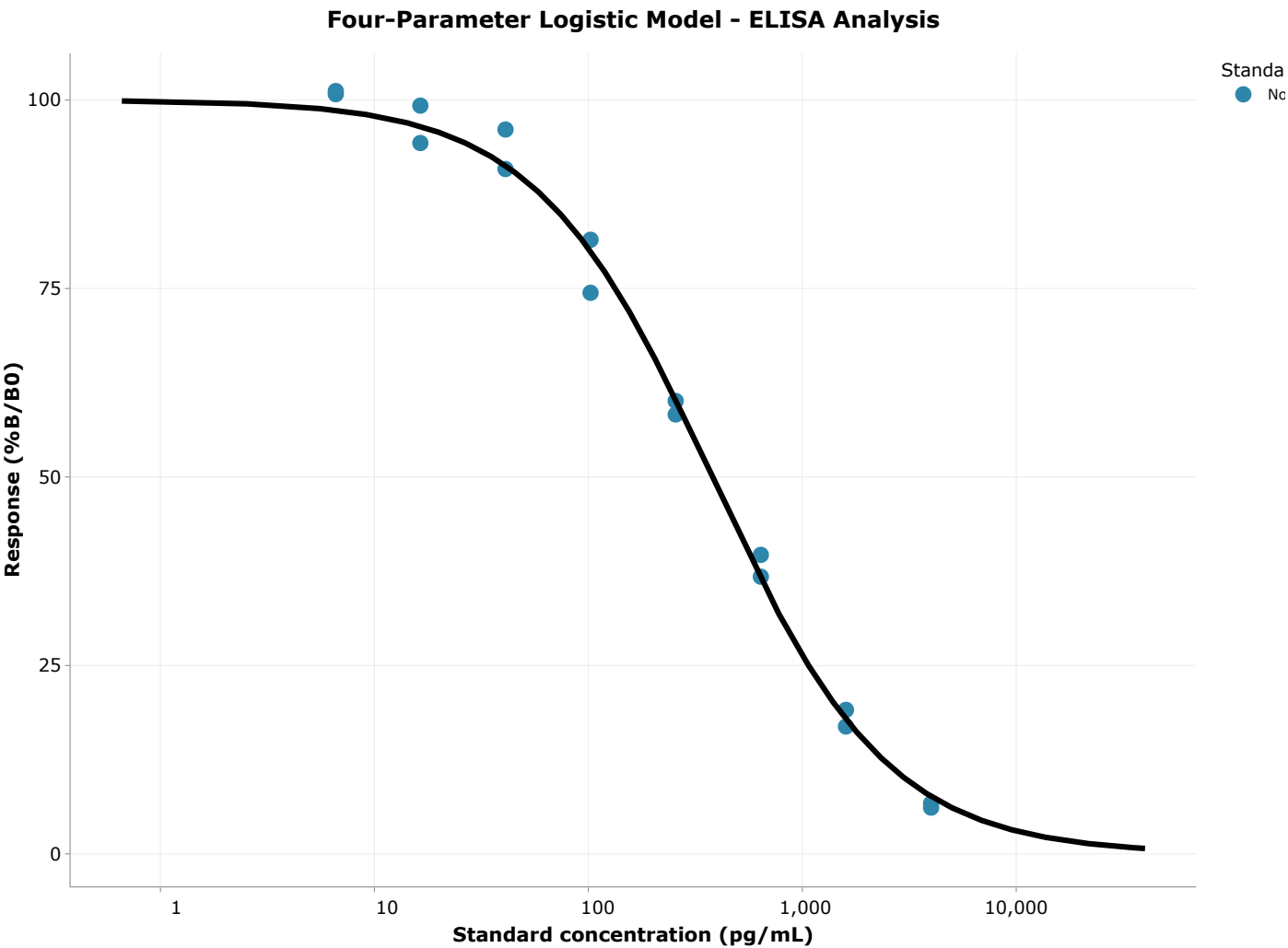
Standard Curve Configuration

Standard Concentrations

Standard	Concentration (pg/mL)
1	4,000.0
2	1,600.0
3	640.0
4	256.0
5	102.4
6	41.0
7	16.4
8	6.6

Dose–Response Curve Analysis

✔ All standards show acceptable variability (<30% CV).



Model Parameters

Four-Parameter Logistic Model Coefficients

	Parameter	Estimate	Std. Error	P-value
b:(Intercept)	Hill Slope	1.06	0.10	NA
c:(Intercept)	Bottom	0.00	3.80	NA
d:(Intercept)	Top	100.00	1.83	NA
e:(Intercept)	IC50	378.33	39.53	NA

- Model Fit Statistics:
- $R^2 = 0.995$
 - RMSE = 2.488 %B/B0
 - Standards Used = 16 of 8

Standard Back-Calculation and Recovery

Standard Back-Calculation and Recovery

Nominal (pg/mL)	n	Back-Calc. (pg/mL)	SD (pg/mL)	Recovery (%)
4,000.0	2	4,784.14	294.1	119.60
1,600.0	2	1,594.29	159.4	99.64
640.0	2	597.26	49.0	93.32
256.0	2	266.32	13.2	104.03
102.4	2	115.46	31.4	112.75
41.0	2	30.72	17.6	74.92
16.4	2	15.14	16.2	92.30
6.6	2	NaN	—	—

Overall Mean Recovery: 99.5%

✔ Overall recovery is within acceptable range (80-120%).

Sample Concentration Results

Output Files Created:
- `unknown_results.csv` - Individual well results
- `unknown_results_summary.csv` - Replicate group statistics with confidence intervals

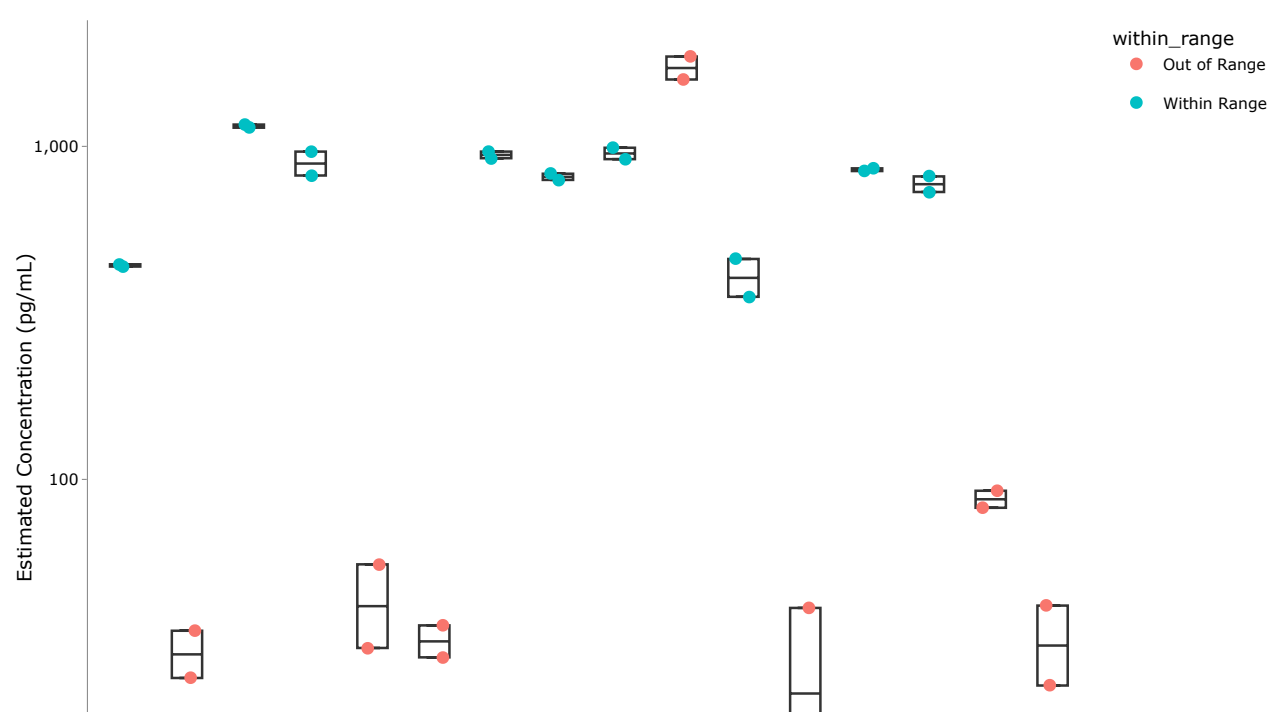
⚠️ Quality Alert:
- Replicate groups with high variability (CV > 30%): AE, BD, BH
- Consider checking sample preparation or dilution consistency

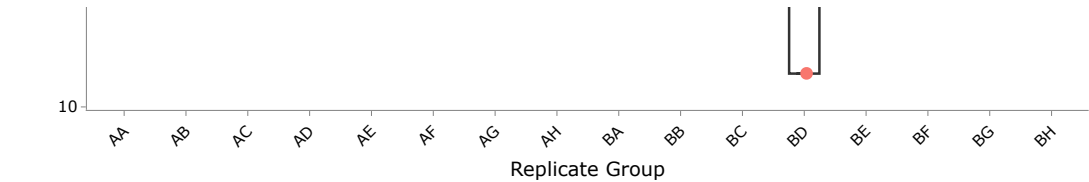
Detailed Sample Results Summary

[detailed_caption]

Replicate Group	Sample IDs	Sample Type	n	Mean (pg/mL)	SD (pg/mL)	SE (pg/mL)	95% CI	CV%	Range
AA	A4,A5	Sample	2	438.99	4.89	3.46	1.11 [395.0 – 482.9]	✔	
AB	C4,C5	Sample	2	30.22	6.92	4.89	22.89 [0.0 – 92.4]		<LLOQ
AC	E4,E5	Sample	2	1,150.11	17.66	12.49	1.54 [991.4 – 1308.8]	✔	
AD	G4,G5	Sample	2	890.87	103.89	73.46	11.66 [0.0 – 1824.3]	✔	
AE	B4,B5	Sample	2	43.37	17.26	12.20	39.79 [0.0 – 198.4]		<LLOQ
AF	D4,D5	Sample	2	32.83	5.11	3.61	15.56 [0.0 – 78.7]		<LLOQ
AG	F4,F5	Sample	2	942.78	30.48	21.55	3.23 [668.9 – 1216.6]	✔	
AH	H4,H5	Sample	2	810.20	24.51	17.33	3.03 [590.0 – 1030.4]	✔	
BA	A6,A7	Sample	2	952.81	53.05	37.51	5.57 [476.2 – 1429.4]	✔	
BB	C6,C7	Sample	2	1,724.14	193.09	136.54	11.20 [0.0 – 3459.0]		>ULOQ
BC	E6,E7	Sample	2	406.20	74.75	52.86	18.40 [0.0 – 1077.8]	✔	
BD	G6,G7	Sample	2	26.85	20.17	14.26	75.11 [0.0 – 208.1]		<LLOQ
BE	B6,B7	Sample	2	851.00	11.26	7.96	1.32 [749.8 – 952.2]	✔	
BF	D6,D7	Sample	2	770.88	58.74	41.54	7.62 [243.1 – 1298.6]	✔	
BG	F6,F7	Sample	2	87.30	7.25	5.13	8.31 [22.1 – 152.5]		<LLOQ
BH	H6,H7	Sample	2	32.92	12.55	8.87	38.12 [0.0 – 145.6]		<LLOQ

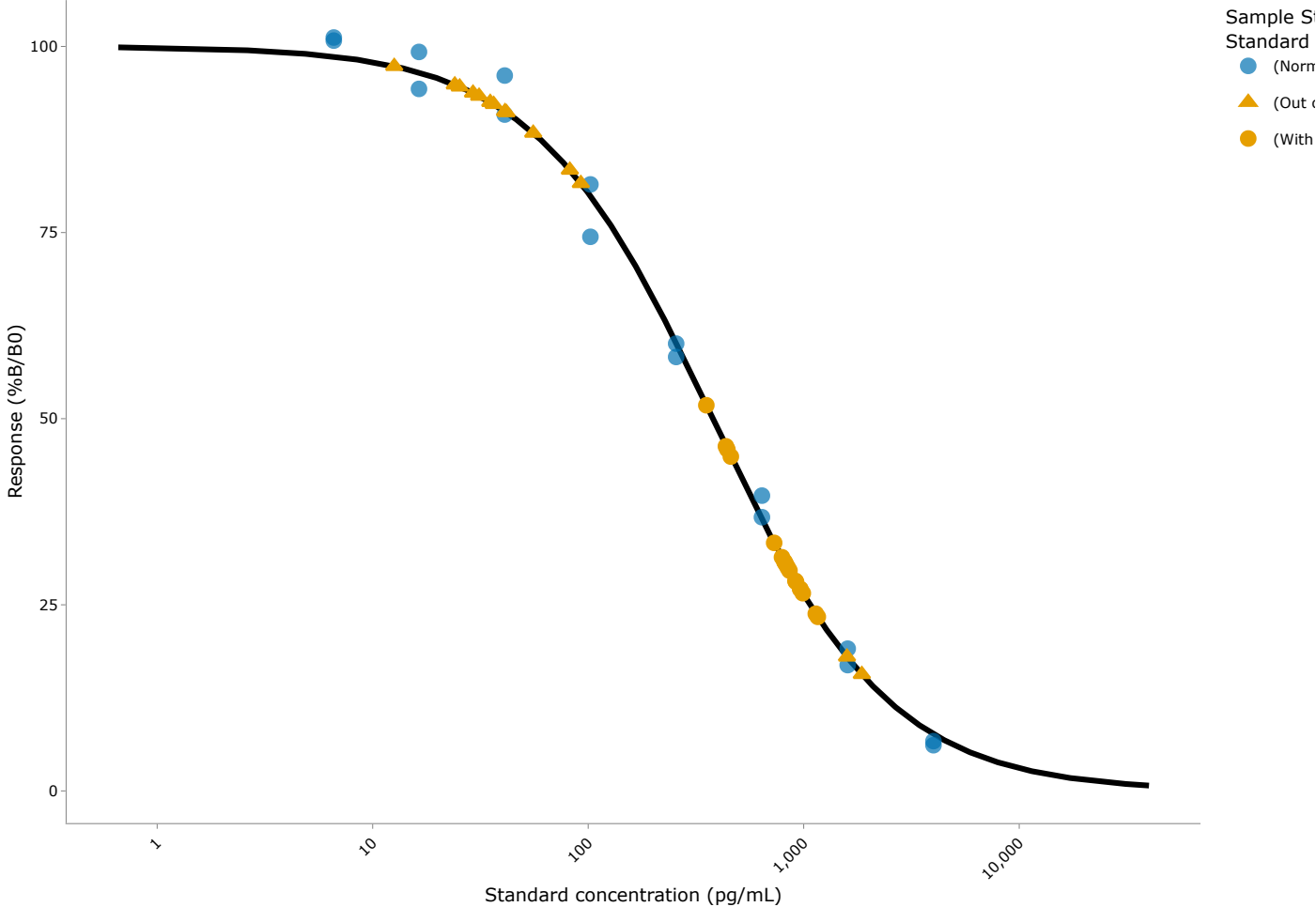
Sample Variability Visualization





Dose-Response Curve with Unknown Samples

Dose-Response Curve with Standards and Unknown Samples



Report Generated: 2026-02-10
Contact: kr.moeller@iaea.org (<mailto:kr.moeller@iaea.org>)
Feedback: [Online Form \(https://forms.office.com/e/q8eqJfp4QM\)](https://forms.office.com/e/q8eqJfp4QM)
Automated bioassay analysis using modular system v2.0

[wavelength_analysis]

[analysis_n_of]

ELISA Analysis Report

Assay Type: ELISA
Analysis Date: 2026-02-10
Analyst: MOELLERKR

This report analyzes ELISA data using a four-parameter logistic dose-response curve to estimate concentrations of cortisol in unknown samples.

Method: Competitive enzyme-linked immunosorbent assay with %B/B0 normalization

Analysis Notes

No additional notes provided.

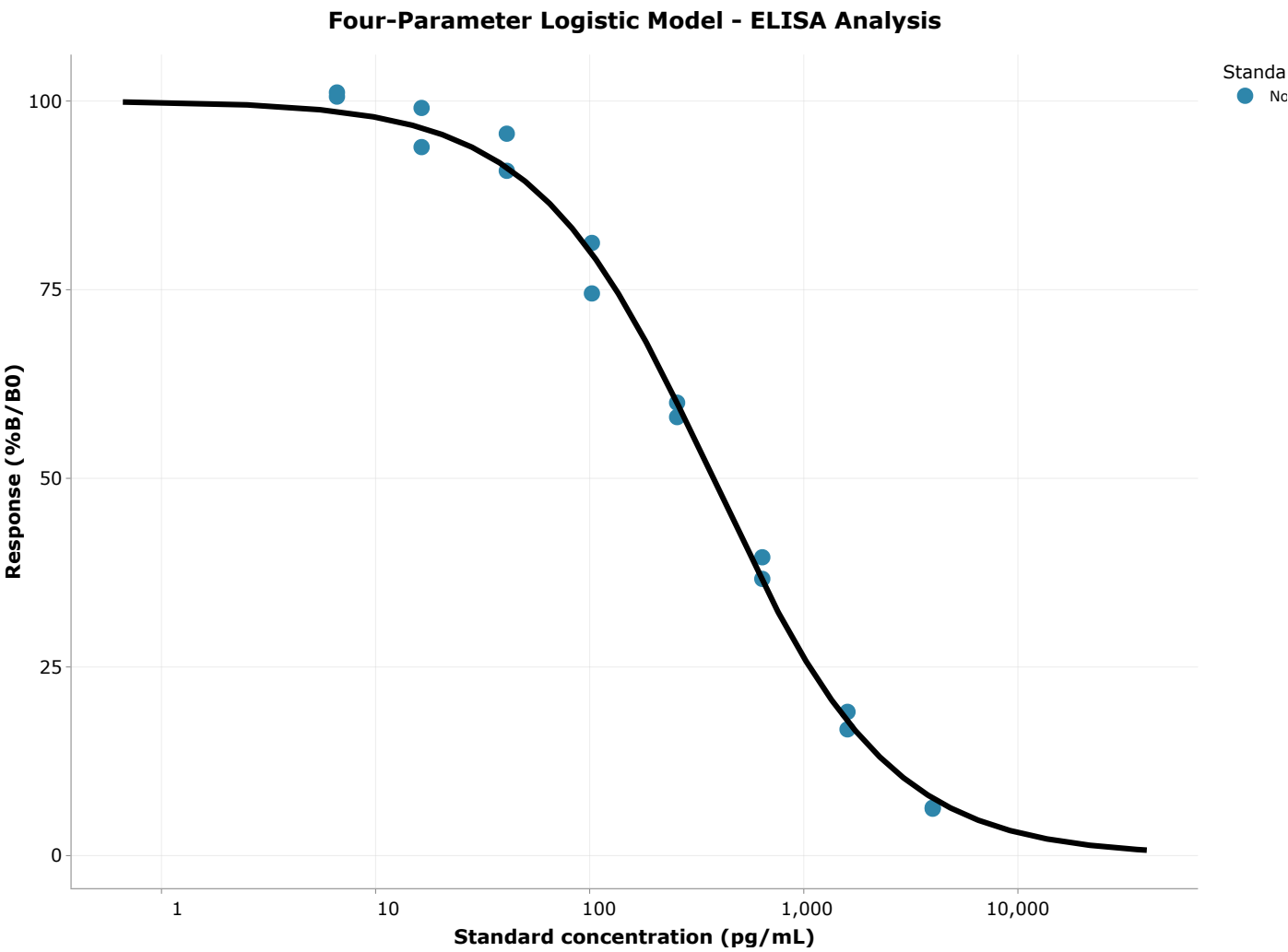
Standard Curve Configuration

Standard Concentrations

Standard	Concentration (pg/mL)
1	4,000.0
2	1,600.0
3	640.0
4	256.0
5	102.4
6	41.0
7	16.4
8	6.6

Dose–Response Curve Analysis

✔ All standards show acceptable variability (<30% CV).



Model Parameters

Four-Parameter Logistic Model Coefficients

	Parameter	Estimate	Std. Error	P-value
b:(Intercept)	Hill Slope	1.05	0.09	NA
c:(Intercept)	Bottom	0.00	3.68	NA
d:(Intercept)	Top	100.00	1.80	NA
e:(Intercept)	IC50	375.71	38.09	NA

Model Fit Statistics:

- **R²** = 0.995
- **RMSE** = 2.425 %B/B0
- **Standards Used** = 16 of 8

Standard Back-Calculation and Recovery

Standard Back-Calculation and Recovery

Nominal (pg/mL)	n	Back-Calc. (pg/mL)	SD (pg/mL)	Recovery (%)
4,000.0	2	4,874.24	75.8	121.86
1,600.0	2	1,601.11	169.6	100.07
640.0	2	596.38	48.6	93.18
256.0	2	265.45	14.1	103.69
102.4	2	114.87	29.7	112.17
41.0	2	31.49	16.3	76.81
16.4	2	16.26	16.8	99.13
6.6	2	NaN	—	—

Overall Mean Recovery: 101.0%

✔ Overall recovery is within acceptable range (80–120%).

Sample Concentration Results

Output Files Created:
- `unknown_results.csv` - Individual well results
- `unknown_results_summary.csv` - Replicate group statistics with confidence intervals

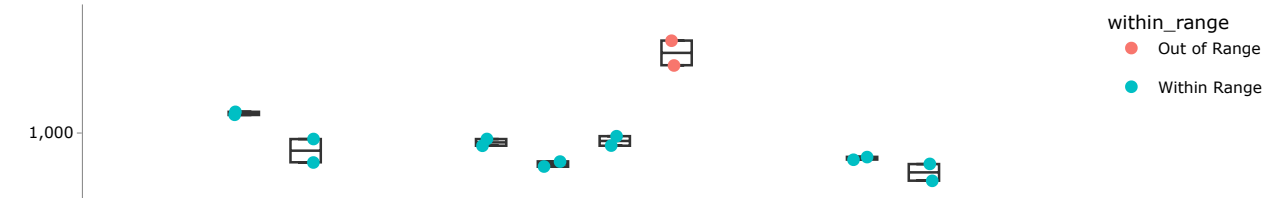
⚠ Quality Alert:
- Replicate groups with high variability (CV > 30%): AE, BD, BH
- Consider checking sample preparation or dilution consistency

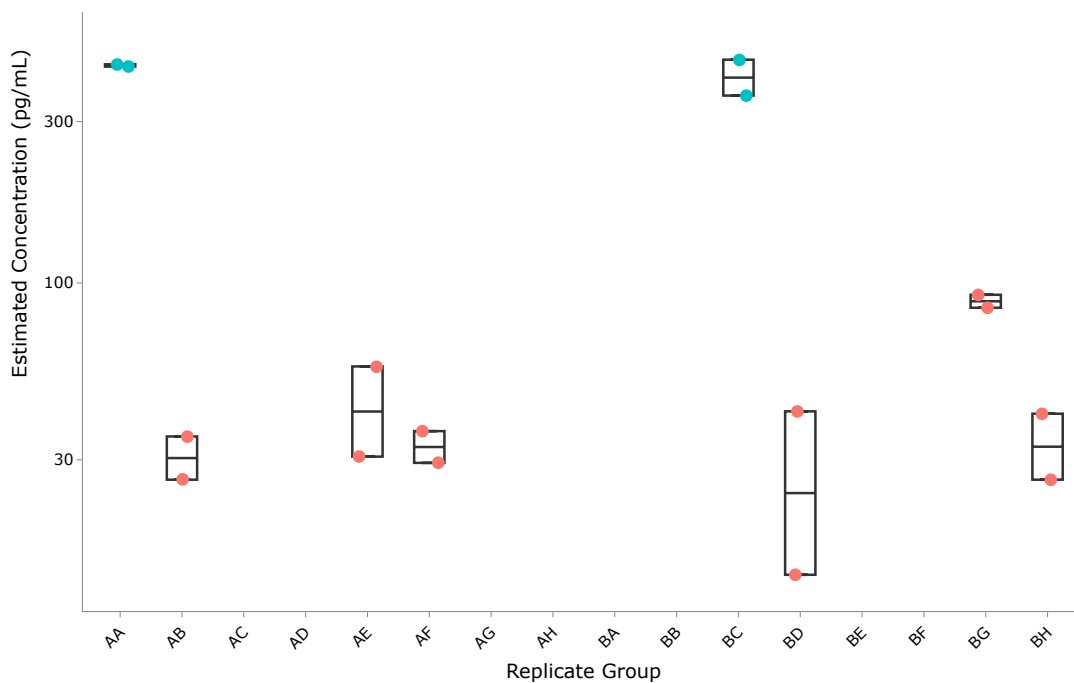
Detailed Sample Results Summary

[detailed_caption]

Replicate Group	Sample IDs	Sample Type	n	Mean (pg/mL)	SD (pg/mL)	SE (pg/mL)	95% CI	CV%	Range
AA	A4,A5	Sample	2	439.25	4.86	3.44	1.11 [395.6 – 482.9]	✔	
AB	C4,C5	Sample	2	30.69	6.34	4.48	20.65 [0.0 – 87.6]		<LLOQ
AC	E4,E5	Sample	2	1,143.01	17.40	12.31	1.52 [986.7 – 1299.4]	✔	
AD	G4,G5	Sample	2	889.63	99.18	70.13	11.15 [0.0 – 1780.7]	✔	
AE	B4,B5	Sample	2	43.66	18.38	13.00	42.09 [0.0 – 208.8]		<LLOQ
AF	D4,D5	Sample	2	32.93	5.01	3.54	15.22 [0.0 – 78.0]		<LLOQ
AG	F4,F5	Sample	2	938.46	30.11	21.29	3.21 [667.9 – 1209.0]	✔	
AH	H4,H5	Sample	2	809.76	20.88	14.76	2.58 [622.2 – 997.3]	✔	
BA	A6,A7	Sample	2	948.04	43.65	30.87	4.60 [555.8 – 1340.3]	✔	
BB	C6,C7	Sample	2	1,731.31	204.69	144.74	11.82 [0.0 – 3570.4]		>ULOQ
BC	E6,E7	Sample	2	407.30	69.98	49.49	17.18 [0.0 – 1036.1]	✔	
BD	G6,G7	Sample	2	27.73	19.80	14.00	71.42 [0.0 – 205.6]		<LLOQ
BE	B6,B7	Sample	2	842.52	11.04	7.81	1.31 [743.3 – 941.7]	✔	
BF	D6,D7	Sample	2	766.34	61.15	43.24	7.98 [217.0 – 1315.7]	✔	
BG	F6,F7	Sample	2	88.35	5.52	3.90	6.25 [38.8 – 137.9]		<LLOQ
BH	H6,H7	Sample	2	33.64	10.50	7.43	31.22 [0.0 – 128.0]		<LLOQ

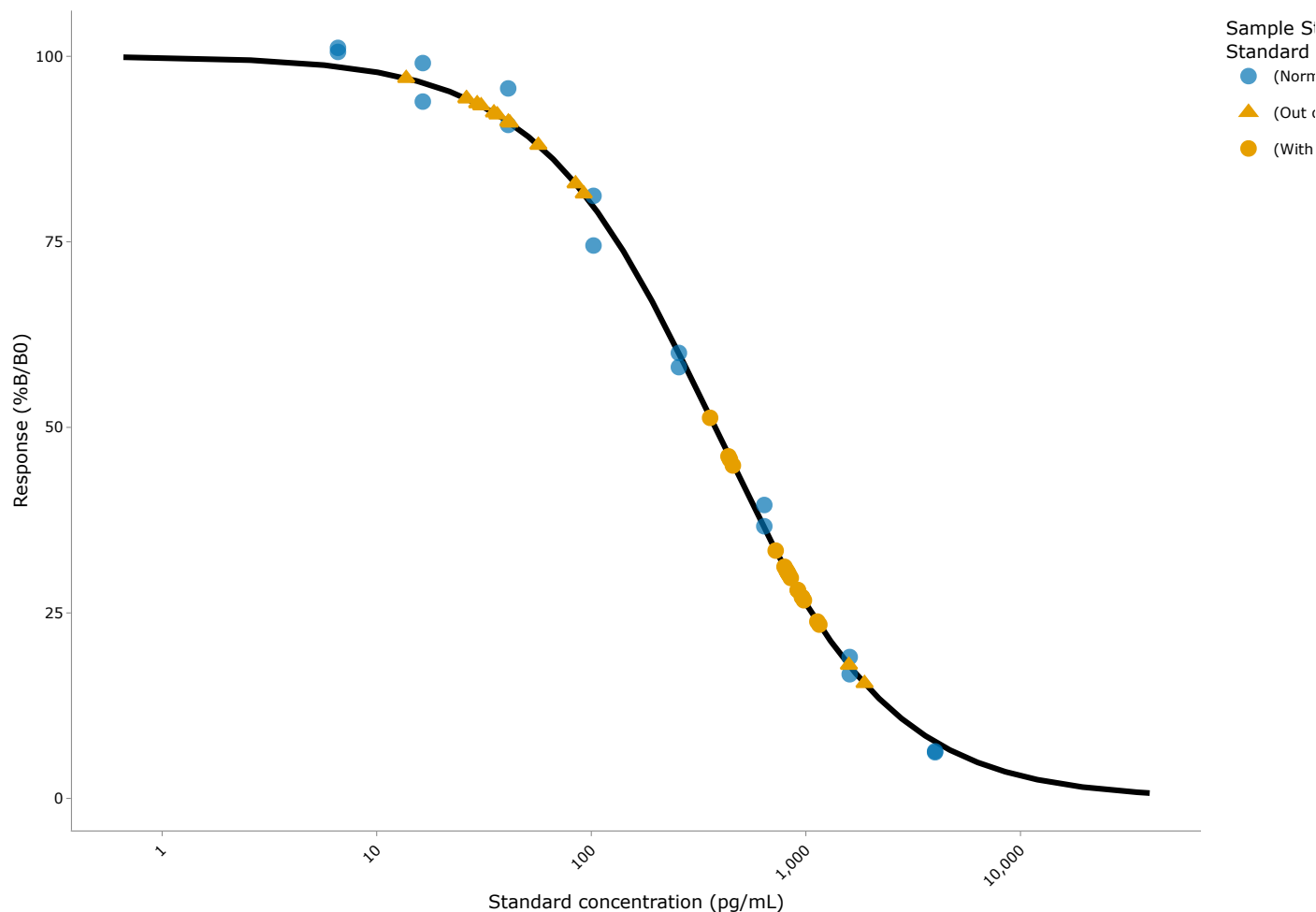
Sample Variability Visualization





Dose-Response Curve with Unknown Samples

Dose-Response Curve with Standards and Unknown Samples



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Contact: kr.moeller@iaea.org (mailto:kr.moeller@iaea.org)

Feedback: Online Form (<https://forms.office.com/e/q8eqJfp4QM>)

Automated bioassay analysis using modular system v2.0

[wavelength_analysis]

ELISA Analysis Report

Assay Type: ELISA
Analysis Date: 2026-02-10
Analyst: MOELLERKR

This report analyzes ELISA data using a four-parameter logistic dose-response curve to estimate concentrations of cortisol in unknown samples.

Method: Competitive enzyme-linked immunosorbent assay with %B/B0 normalization

Analysis Notes

No additional notes provided.

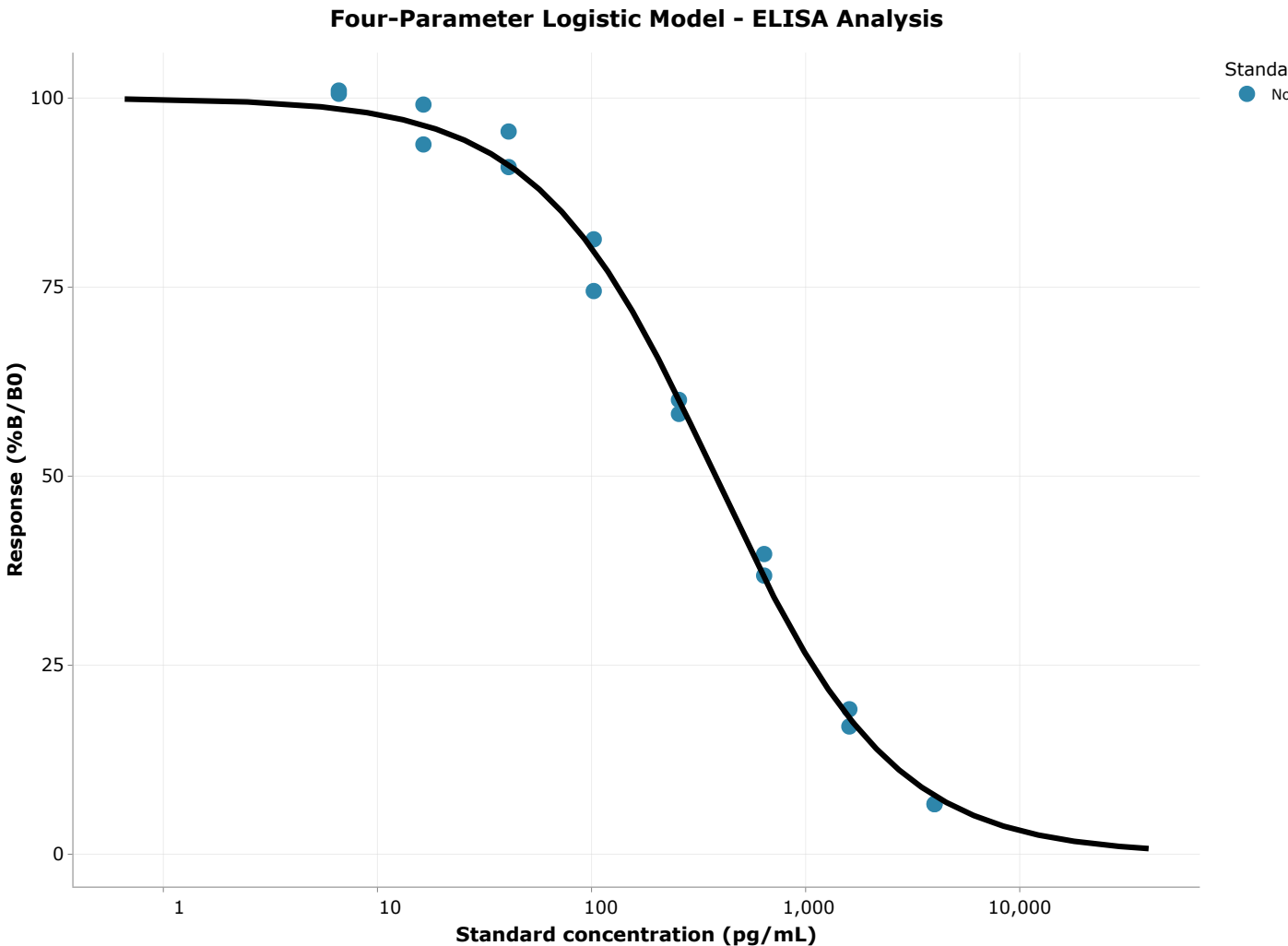
Standard Curve Configuration

Standard Concentrations

Standard	Concentration (pg/mL)
1	4,000.0
2	1,600.0
3	640.0
4	256.0
5	102.4
6	41.0
7	16.4
8	6.6

Dose-Response Curve Analysis

✔ All standards show acceptable variability (<30% CV).



Model Parameters

Four-Parameter Logistic Model Coefficients

	Parameter	Estimate	Std. Error	P-value
b:(Intercept)	Hill Slope	1.05	0.09	NA
c:(Intercept)	Bottom	0.00	3.71	NA
d:(Intercept)	Top	100.00	1.79	NA
e:(Intercept)	IC50	378.15	38.52	NA

Model Fit Statistics:

- **R²** = 0.995
- **RMSE** = 2.403 %B/B0
- **Standards Used** = 16 of 8

Standard Back-Calculation and Recovery


Standard Back-Calculation and Recovery

Nominal (pg/mL)	n	Back-Calc. (pg/mL)	SD (pg/mL)	Recovery (%)
4,000.0	2	4,697.73	0.0	117.44
1,600.0	2	1,606.84	166.9	100.43
640.0	2	597.37	48.5	93.34
256.0	2	265.84	13.7	103.84
102.4	2	114.71	30.5	112.03
41.0	2	31.29	15.6	76.31
16.4	2	16.10	17.0	98.17
6.6	2	NaN	—	—

```
##
## **Overall Mean Recovery:** 100.2%








##  Overall recovery is within acceptable range (80-120%).
```

Sample Concentration Results

```
##
## **Output Files Created:**
## - `unknown_results.csv` - Individual well results
## - `unknown_results_summary.csv` - Replicate group statistics with confidence intervals
##
##  Quality Alert:
## - Replicate groups with high variability (CV > 30%): AE, BD, BH
## - Consider checking sample preparation or dilution consistency
```

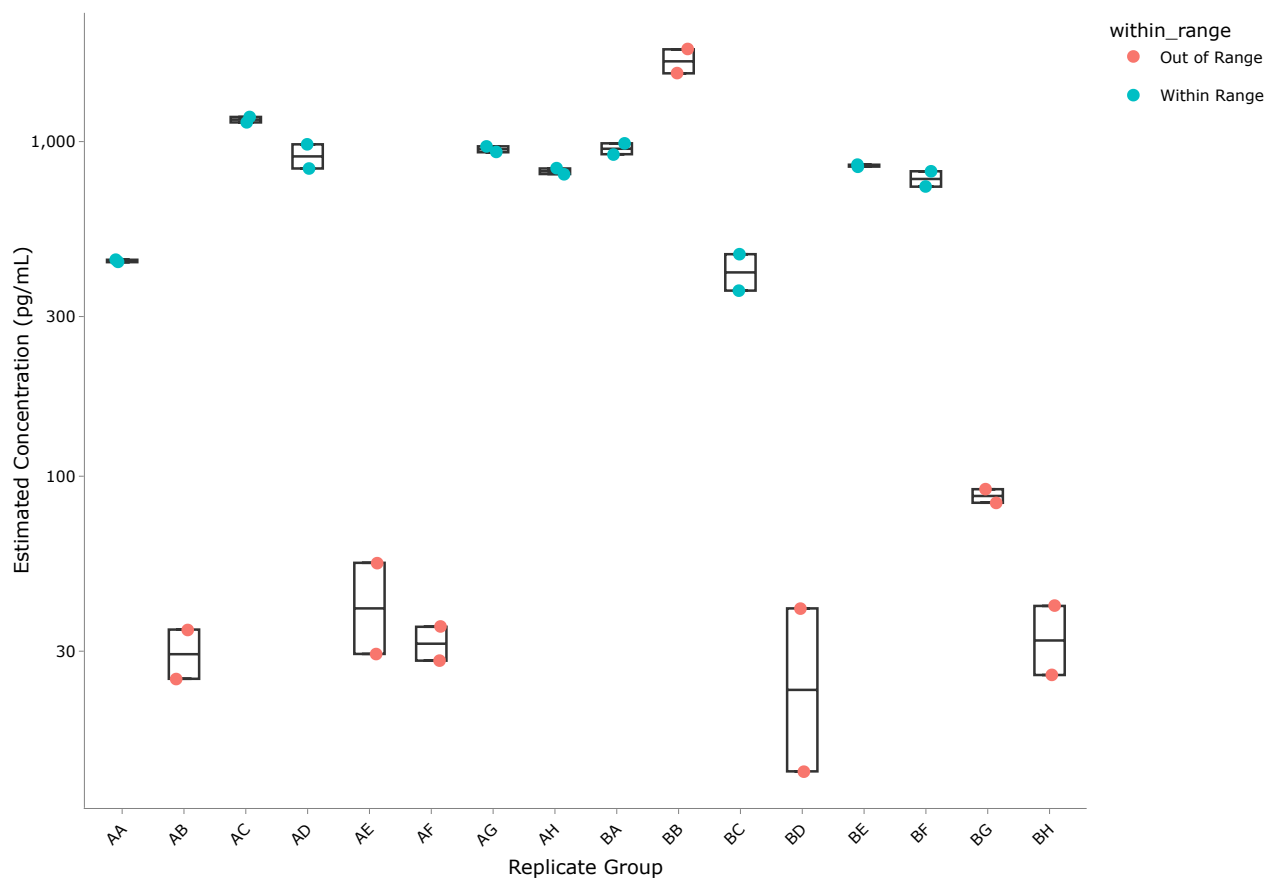
Detailed Sample Results Summary

[detailed_caption]

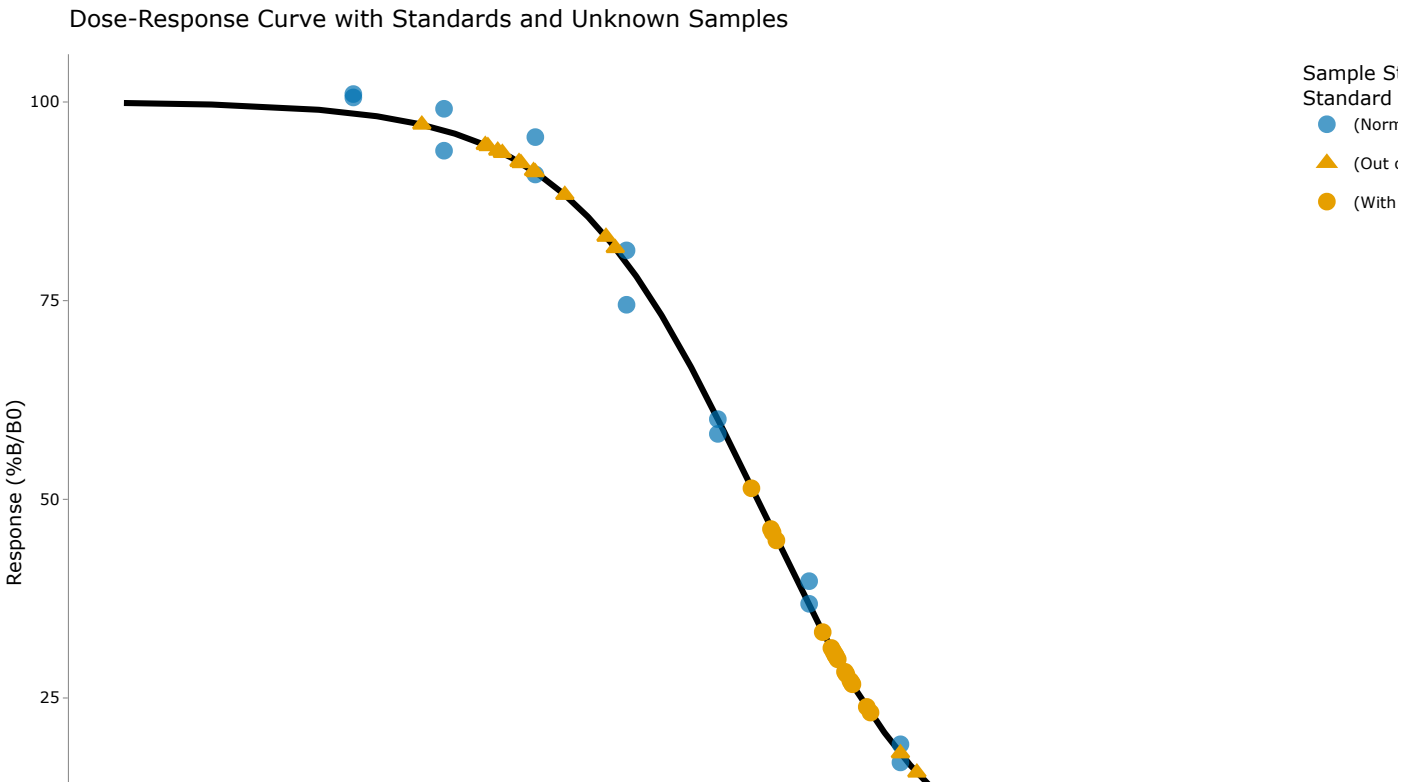
Replicate Group	Sample IDs	Sample Type	n	Mean (pg/mL)	SD (pg/mL)	SE (pg/mL)	95% CI	CV%	Range
AA	A4,A5	Sample	2	439.82	5.10	3.61	1.159 [394.0 – 485.6]		
AB	C4,C5	Sample	2	29.81	7.07	5.00	23.722 [0.0 – 93.3]		<LLOQ
AC	E4,E5	Sample	2	1,162.91	31.03	21.94	2.669 [884.1 – 1441.7]		
AD	G4,G5	Sample	2	906.20	106.26	75.14	11.726 [0.0 – 1860.9]		
AE	B4,B5	Sample	2	42.27	18.14	12.83	42.926 [0.0 – 205.3]		<LLOQ
AF	D4,D5	Sample	2	31.80	5.22	3.69	16.402 [0.0 – 78.7]		<LLOQ
AG	F4,F5	Sample	2	948.57	27.35	19.34	2.884 [702.8 – 1194.3]		
AH	H4,H5	Sample	2	815.50	22.02	15.57	2.700 [617.7 – 1013.3]		
BA	A6,A7	Sample	2	952.49	50.43	35.66	5.294 [499.4 – 1405.6]		
BB	C6,C7	Sample	2	1,743.27	203.20	143.68	11.656 [0.0 – 3568.9]		>ULOQ
BC	E6,E7	Sample	2	409.70	72.21	51.06	17.625 [0.0 – 1058.5]		

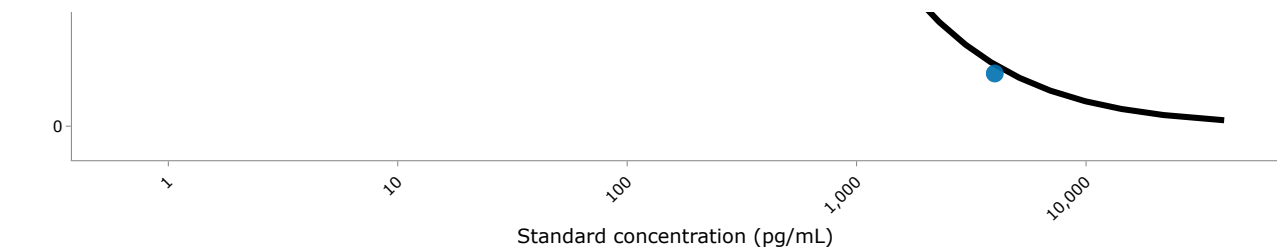
Replicate Group	Sample IDs	Sample Type	n	Mean (pg/mL)	SD (pg/mL)	SE (pg/mL)	95% CI	CV%	Range
BD	G6,G7	Sample	2	26.70	19.20	13.57	71.906	[0.0 – 199.2]	<LLOQ
BE	B6,B7	Sample	2	847.30	7.75	5.48	0.914	[777.7 – 916.9]	✓
BF	D6,D7	Sample	2	774.29	57.97	40.99	7.487	[253.4 – 1295.2]	✓
BG	F6,F7	Sample	2	87.38	5.76	4.08	6.596	[35.6 – 139.2]	<LLOQ
BH	H6,H7	Sample	2	33.21	10.95	7.75	32.984	[0.0 – 131.6]	<LLOQ

Sample Variability Visualization



Dose-Response Curve with Unknown Samples





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Contact: kr.moeller@iaea.org (<mailto:kr.moeller@iaea.org>)
Feedback: [Online Form](https://forms.office.com/e/q8eqJfp4QM) (<https://forms.office.com/e/q8eqJfp4QM>)
Automated bioassay analysis using modular system v2.0

[overall_conclusions]

[wavelength_performance]

[recommendations]

- [rec_r2]
- [rec_cv]
- [rec_separation]

[report_generated] 2026-02-10 [contact] kr.moeller@iaea.org (<mailto:kr.moeller@iaea.org>) [feedback] [\[online_form\]](https://forms.office.com/e/q8eqJfp4QM) (<https://forms.office.com/e/q8eqJfp4QM>)
[automated_multi]