It's time to rethink your CRO.™

AIT Bioscience

My Hamilton Can Beat Your Analyst!

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CPSA 2010

- Goals:
  - Reduce human labor and error
    - *Automated pipetting*
    - *Use the right materials- barcoded assets- no exceptions*
  - Reduce tracking of materials for stability
    - *Make fresh- collect in-study stability data every run*
  - Enable fast changeovers between methods
    - *If you can standardize on “method structure”*

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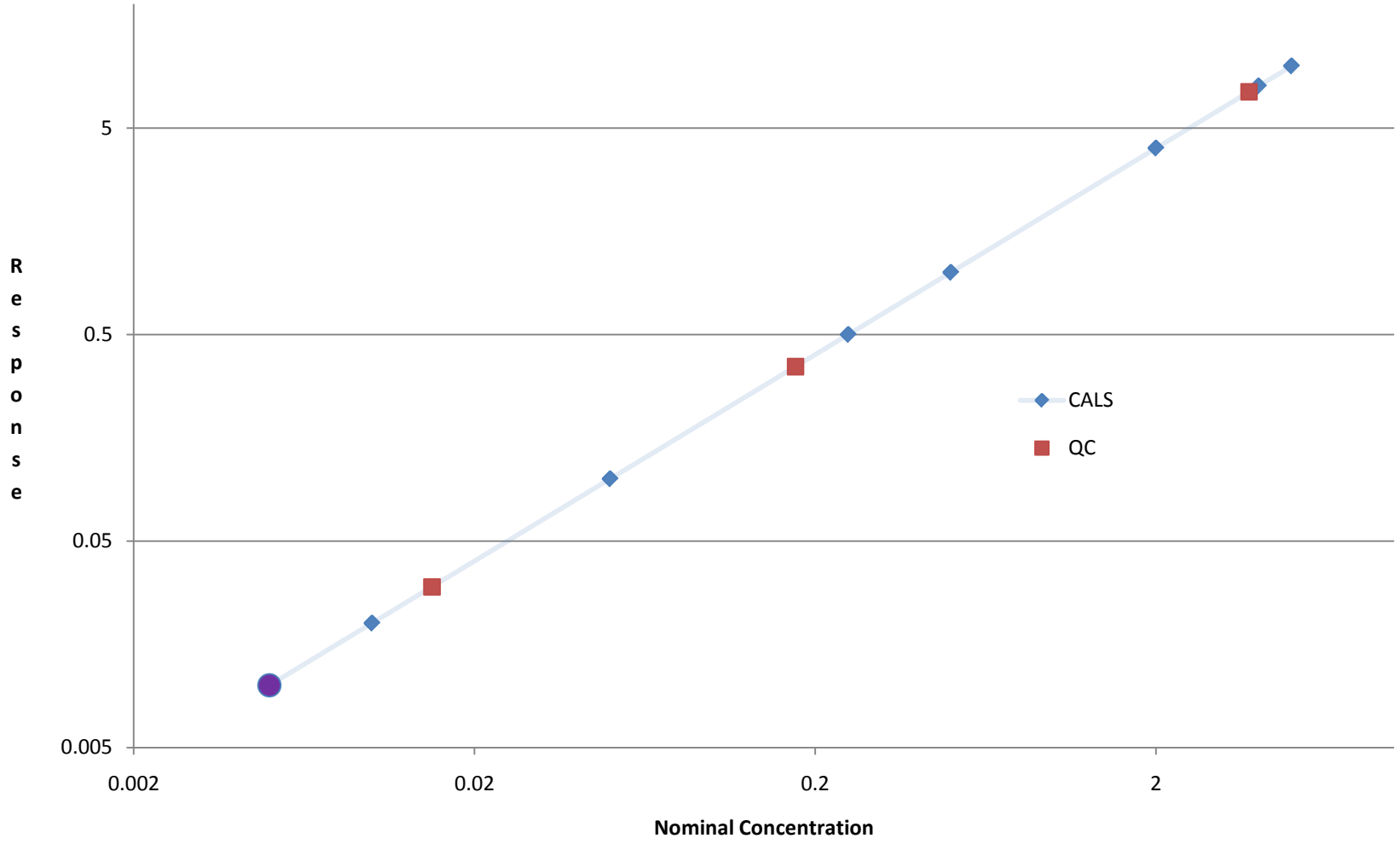
Standardizing Across Methods



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Uniform Generation of Working Solutions and Calibration Standards

SPIKING SOLN in µg/mL: 1

To make	Solution to dilute	Source Volume	Diluent Volume	Final concentration in ng/mL
Working 1	Spiking solution	100	900	100
Working 2	Working 1	800	200	80
Working 3	Working 2	500	500	40
Working 4	Working 3	250	750	10
Working 5	Working 4	500	500	5
Working 6	Working 5	200	800	1
Working 7	Working 6	200	800	0.2
Working 8	Working 7	500	500	0.1

➔

To make	Solution to dilute	Spike	Blank Plasma	Cal std in ng/mL	Relative Concentrations
Cal Std 1	Working 1	50	950	5	1000
Cal Std 2	Working 2	50	950	4	800
Cal Std 3	Working 3	50	950	2	400
Cal Std 4	Working 4	50	950	0.5	100
Cal Std 5	Working 5	50	950	0.25	50
Cal Std 6	Working 6	50	950	0.05	10
Cal Std 7	Working 7	50	950	0.01	2
Cal Std 8	Working 8	50	950	0.005	1

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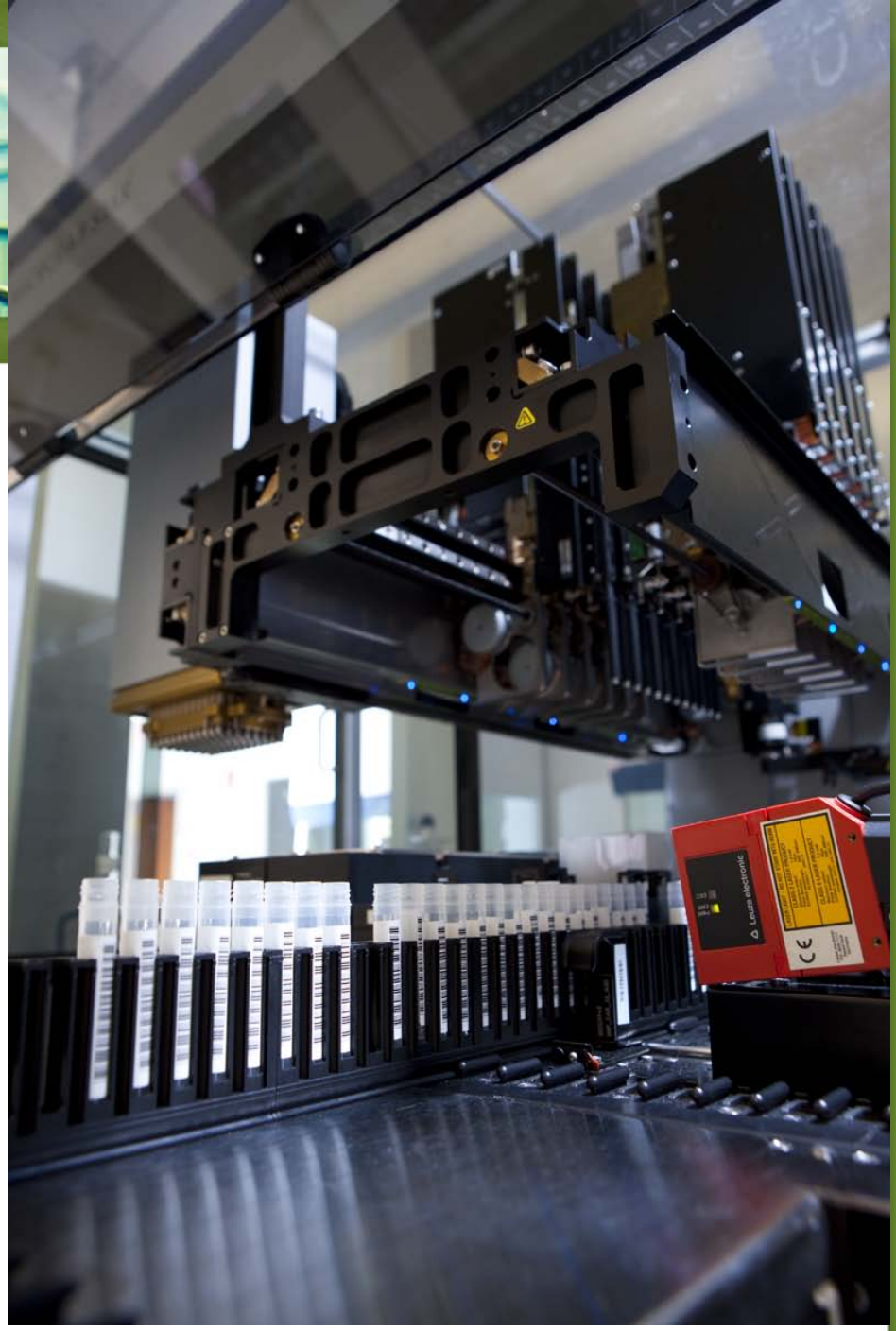
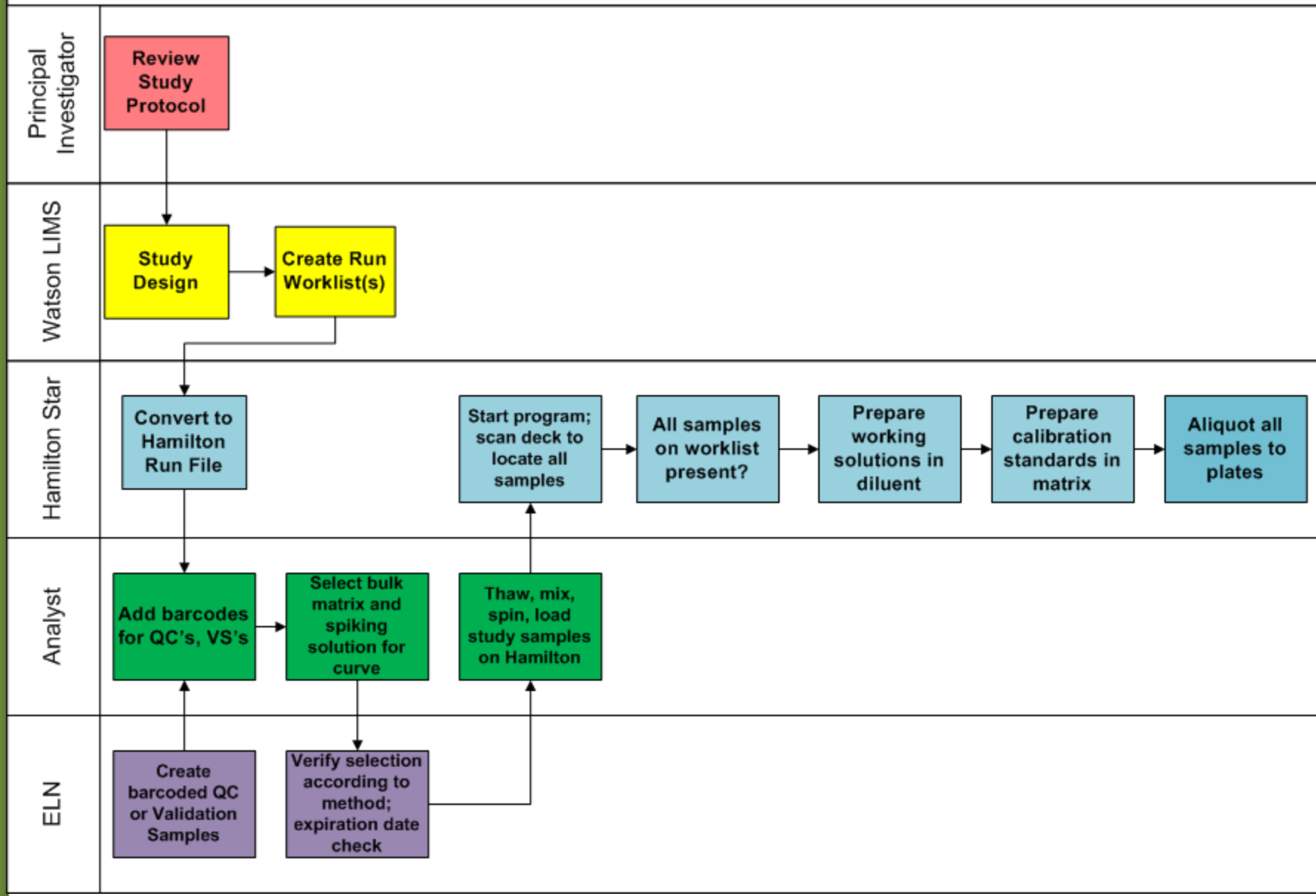
- Tip attachment mechanism is robust
- Tubes and plates id'd by barcodes
- Flexibility to meet accuracy specs by "liquid class" definitions
- Log and mapping files prove sample handling history
- Sample sensing diagnostics



Robotic Run Preparation



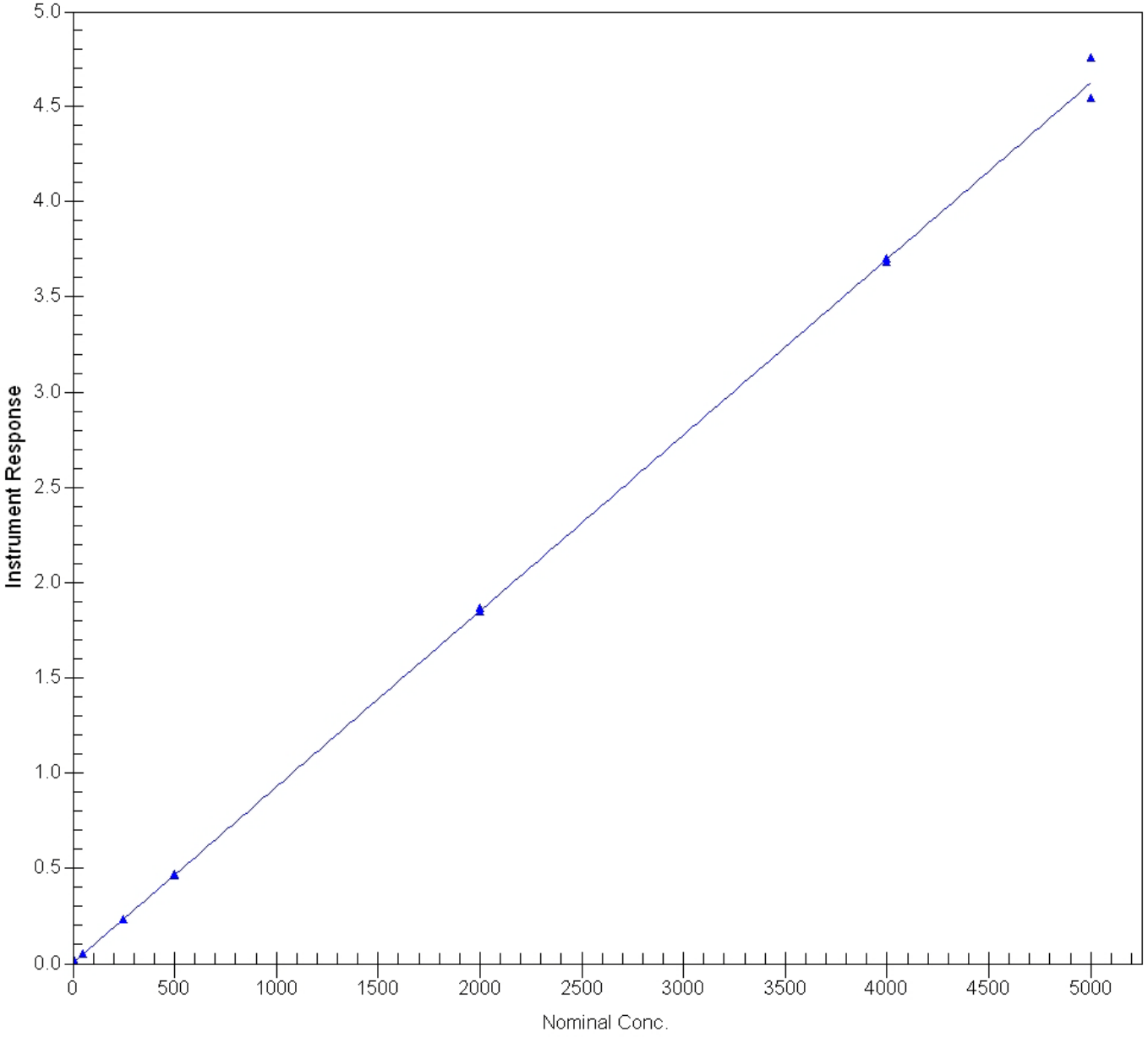

Plasma
H2O

	CS 5.00	CS 10.0	CS 50.0	CS 250	CS 500	CS 2000	CS 4000	CS 5000
Theor. Conc. (in pg/mL)	5.00	10.0	50	250	500	2000	4000	5000
Found Conc.								
#1	5.09	9.98	50.6	245	508	2000	3980	5150
#2	4.90	10.0	49.0	250	498	2010	4000	4910
Mean	5.00	9.99	49.8	248	503	2010	3990	5030
%Theoretical for the Mean	100	99.9	99.6	99.2	100.6	100.5	99.8	100.6
%Bias of the Mean	0.0	-0.1	-0.4	-0.8	0.6	0.5	-0.3	0.6

	LOW QC	MIDDLE QC	HIGH QC
Theor. Conc.	15.0	375	3750
Found Conc.			
#1	15.5	384	3730
#2	15.5	380	3750
#3	15.3	396	3820
#4	14.9	368	3670
#5	14.2	384	3660
#6	14.7	372	3870
Mean	15.0	381	3750
%CV	3.4	2.6	2.2
%Theoretical	100.0	101.6	100.0
%Bias	0.0	1.6	0.0
n	6	6	6

Fentanyl in plasma
5-5000 pg/mL

Analytical Run 1 analyzed on 15-Feb-2010 Calibration Standards for Fentanyl (pg/mL)
Regression Method = LINEAR - Weighting Factor = 1/X**2
Response = Slope * Conc + Intercept
Slope = 0.000923534 Intercept = 0.00488266 R-Squared = 0.9997
(Study Test Study with 24 samples per subject)

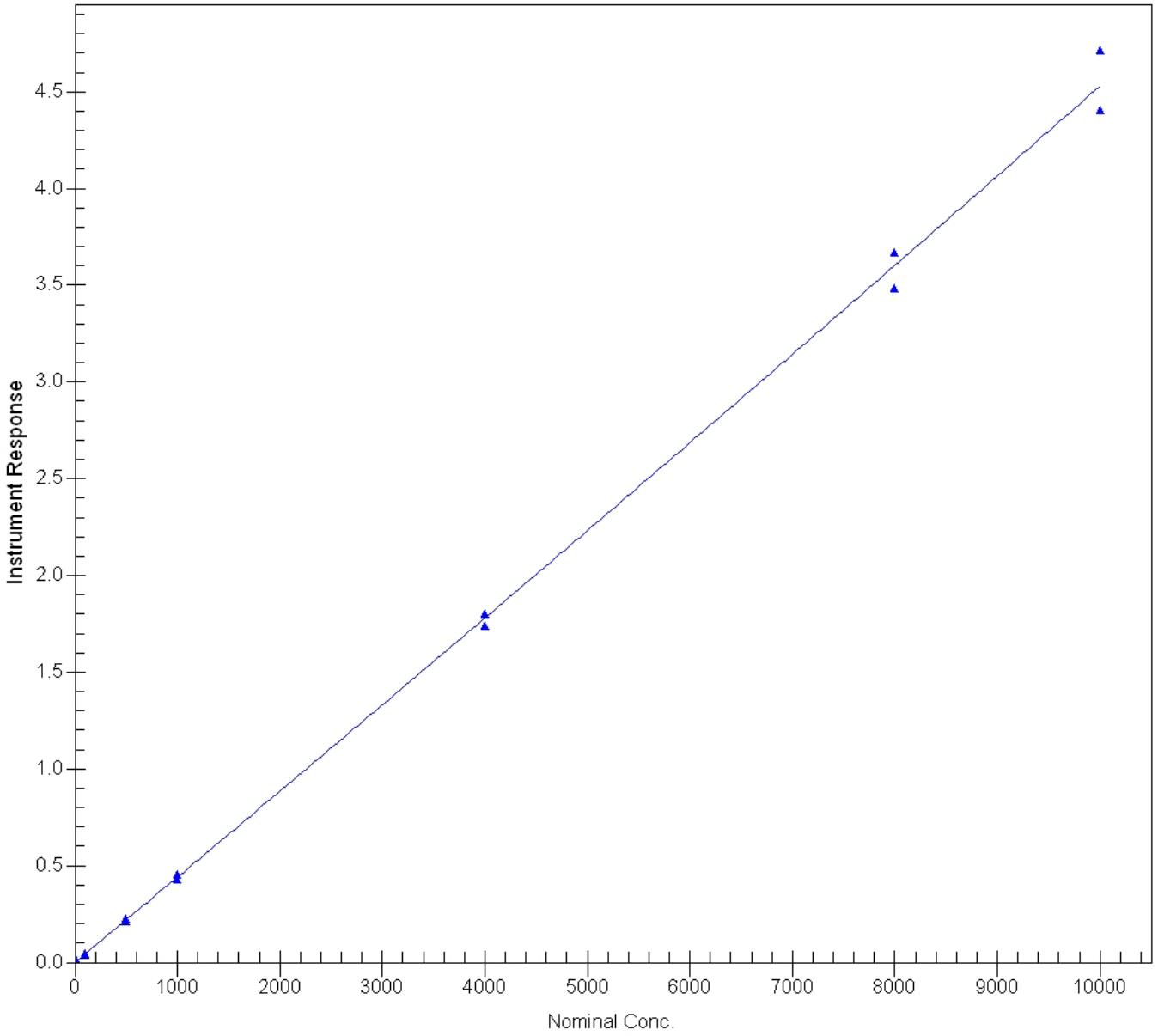


	CS 10.0	CS 20.0	CS 100	CS 500	CS 1000	CS 4000	CS 8000	CS 10000
Theor. Conc. (in ng/mL)	10.0	20.0	100	500	1000	4000	8000	10000
Found Conc.								
#1	9.51	18.7	96.7	490	980	3920	7740	9730
#2	10.5	21.1	105	506	1030	4050	8140	10400
Mean	10.0	19.9	101	498	1010	3990	7940	10100
%Theoretical for the Mean	100.0	99.5	101.0	99.6	101.0	99.8	99.3	101.0
%Bias of the Mean	0.0	-0.5	1.0	-0.4	1.0	-0.3	-0.8	1.0
n	2	2	2	2	2	2	2	2

	LOW QC	MIDDLE QC	HIGH QC
Theor. Conc.	30	750	7500
Found Conc.			
#1	28.8	760	7670
#2	31.1	772	7740
#3	31.9	783	8020
#4	31.3	789	7890
#5	31.2	787	8040
#6	29.6	778	7970
Mean	30.7	778	7890
%CV	3.8	1.4	1.9
%Theoretical	102.3	103.7	105.2
%Bias	2.3	3.7	5.2
n	6	6	6

Methadone in plasma
10-10,000 ng/mL

Analytical Run 2 analyzed on 15-Feb-2010 Calibration Standards for Methadone (ng/mL)
Regression Method = QUADRATIC - Weighting Factor = 1/X**2
Response = A * (Conc**2) + B * Conc + C
A = 0.00000000131859 B = 0.000439783 C = 0.000331483 R-Squared = 0.9982
(Study Test Study with 24 samples per subject)



	CS 10.0	CS 20.0	CS 100	CS 500	CS 1000	CS 4000	CS 8000	CS 10000
Theor. Conc. (in ng/mL)	10.0	20.0	100	500	1000	4000	8000	10000
Found Conc.								
#1	10.1	20.4	98.6	497	1020	4020	8040	9930
#2	9.76	20.1	100	503	991	4000	7880	10100
Mean	9.93	20.3	99.3	500	1010	4010	7960	10000
%Theoretical	99.3	101.5	99.3	100	101	100.3	99.5	100
%Bias	-0.7	1.5	-0.7	0.0	1.0	0.3	-0.5	0.0
n	2	2	2	2	2	2	2	2

	LOW QC	MIDDLE QC	HIGH QC
Theor. Conc.	30.0	750	7500
Found Conc.			
#1	31.6	777	7830
#2	29.7	759	7780
#3	29.8	771	7840
#4	29.8	763	7700
#5	30.8	762	7700
#6	29.8	766	7730
Mean	30.3	766	7760
%CV	2.6	0.9	0.8
%Theoretical	101	102.1	103.5
%Bias	1.0	2.1	3.5
n	6	6	6

EDDP in plasma
10-10,000 ng/mL

Analytical Run 2 analyzed on 15-Feb-2010 Calibration Standards for EDDP (ng/mL)
Regression Method = QUADRATIC - Weighting Factor = 1/X
Response = A * (Conc**2) + B * Conc + C
A = 0.000000000991493 B = 0.000528548 C = 0.00108245 R-Squared = 0.9999
(Study Test Study with 24 samples per subject)