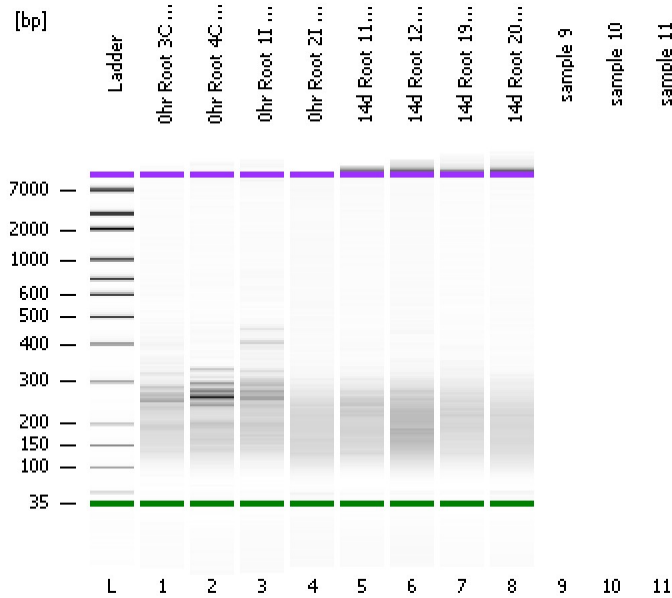


Assay Class: High Sensitivity DNA Assay  
Data Path: C:\...ents and Settings\Bioanalyzer\2014-03-21\2014-03-21\_007.xad

Created: 3/21/2014 3:19:04 PM  
Modified: 3/21/2014 3:52:34 PM

**Electrophoresis File Run Summary**



Instrument Information:

Instrument Name: DE13701086      Firmware: C.01.069  
Serial#: DE13701086      Type: G2938B

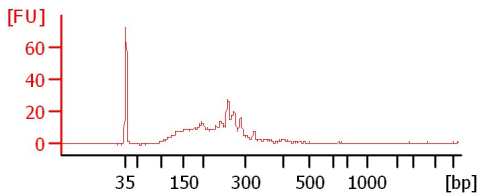
Assay Information:

Assay Origin Path: C:\Program Files\Agilent\2100 bioanalyzer\2100 expert\assays\dsDNA\High Sensitivity DNA.xsy  
Assay Class: High Sensitivity DNA Assay  
Version: 1.03  
Assay Comments: Copyright © 2003-2010 Agilent Technologies

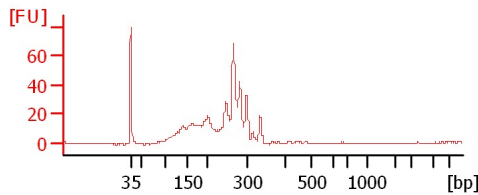
Chip Information:

Chip Lot #:      Reagent Kit Lot #:      Chip Comments:

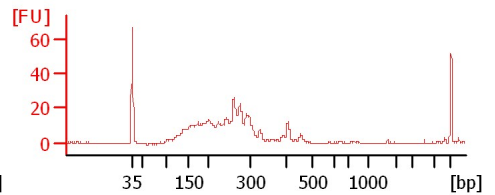
**0hr Root 3C Shear 3X**



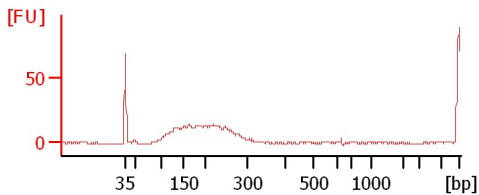
**0hr Root 4C Shear 3X**



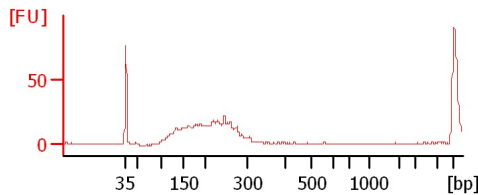
**0hr Root 1I Shear 3X**



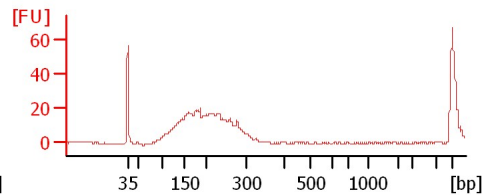
**0hr Root 2I Shear 3X**



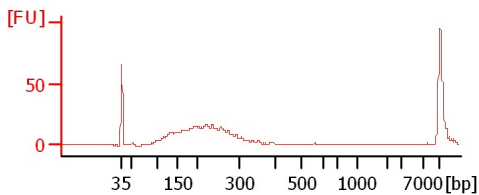
**14d Root 11I Shear 3X**



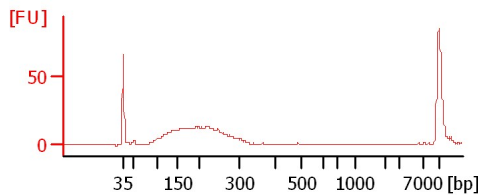
**14d Root 12I Shear 3X**



**14d Root 19C Shear 3X**



**14d Root 20C Shear 3X**



Assay Class: High Sensitivity DNA Assay  
Data Path: C:\...ents and Settings\Bioanalyzer\2014-03-21\2014-03-21\_007.xad

Created: 3/21/2014 3:19:04 PM  
Modified: 3/21/2014 3:52:34 PM

**Electrophoresis File Run Summary (Chip Summary)**

Sample Name	Sample Comment	Rest. Digest	Status	Observation	Result Label	Result Color
0hr Root 3C Shear 3X		<input type="checkbox"/>	✓			
0hr Root 4C Shear 3X		<input type="checkbox"/>	✓			
0hr Root 1I Shear 3X		<input type="checkbox"/>	✓			
0hr Root 2I Shear 3X		<input type="checkbox"/>	✓			
14d Root 11I Shear 3X		<input type="checkbox"/>	✓			
14d Root 12I Shear 3X		<input type="checkbox"/>	✓			
14d Root 19C Shear 3X		<input type="checkbox"/>	✓			
14d Root 20C Shear 3X		<input type="checkbox"/>	✓			
sample 9		<input type="checkbox"/>				
sample 10		<input type="checkbox"/>				
sample 11		<input type="checkbox"/>				
Ladder		<input type="checkbox"/>	✓			

**Chip Lot #**

**Reagent Kit Lot #**

**Chip Comments :**

Assay Class: High Sensitivity DNA Assay  
Data Path: C:\...ents and Settings\Bioanalyzer\2014-03-21\2014-03-21\_007.xad

Created: 3/21/2014 3:19:04 PM  
Modified: 3/21/2014 3:52:34 PM

**Electrophoresis Assay Details**

**General Analysis Settings**

Number of Available Sample and Ladder Wells (Max.) : 12  
Minimum Visible Range [s] : 32  
Maximum Visible Range [s] : 138  
Start Analysis Time Range [s] : 33  
End Analysis Time Range [s] : 137.5  
Ladder Concentration [pg/μl] : 1950  
Uses Standard Area for Ladder Fragments  
Lower Marker Concentration [pg/μl] : 125  
Upper Marker Concentration [pg/μl] : 75  
Used Upper Marker for Quantitation  
Standard Curve Fit is Point to Point  
Show Data Aligned to Lower and Upper Marker

**Integrator Settings**

Integration Start Time [s] : 33.05  
Integration End Time [s] : 137  
Slope Threshold : 0.8  
Height Threshold [FU] : 5  
Area Threshold : 0.1  
Width Threshold [s] : 0.6  
Baseline Plateau [s] : 0.5

**Filter Settings**

Filter Width [s] : 0.5  
Polynomial Order : 4

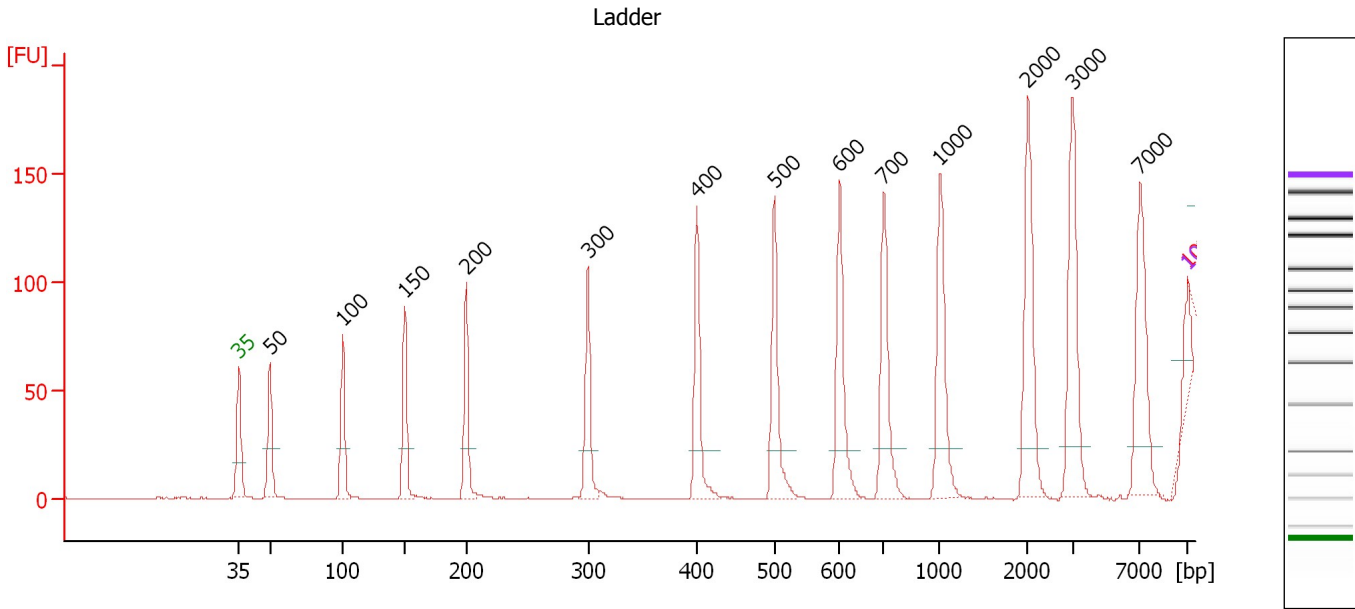
**Ladder**

Ladder Peak	Size	Area
1	35	160
2	50	210
3	100	208
4	150	221
5	200	242
6	300	270
7	400	305
8	500	306
9	600	336
10	700	321
11	1000	366
12	2000	413
13	3000	411
14	7000	400
15	10380	214

Assay Class: High Sensitivity DNA Assay  
 Data Path: C:\...ents and Settings\Bioanalyzer\2014-03-21\2014-03-21\_007.xad

Created: 3/21/2014 3:19:04 PM  
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**Electropherogram Summary**



**Overall Results for Ladder**

Noise: 0.2

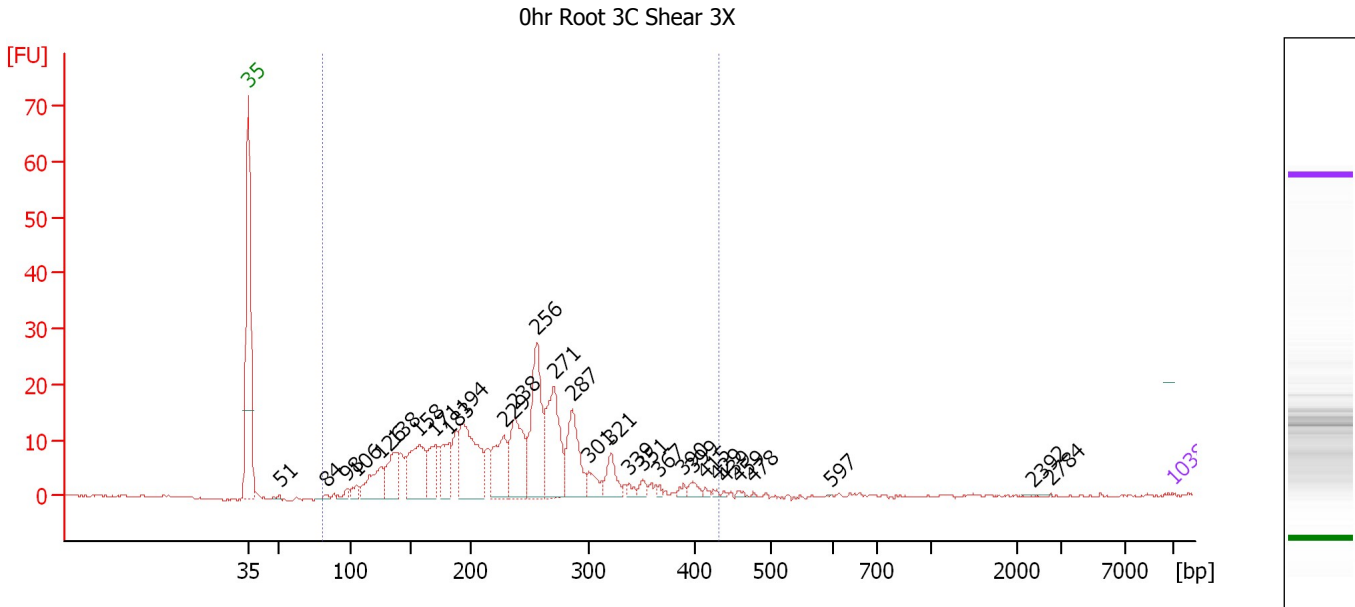
**Peak table for Ladder**

Peak	Aligned Migration Time [s]	Size [bp]	Conc. [pg/μl]	Molarity [pmol/l]	Observations
1	43.00	35	125.00	5,411.3	Lower Marker
2	45.28	50	150.00	4,545.5	Ladder Peak
3	50.67	100	150.00	2,272.7	Ladder Peak
4	55.23	150	150.00	1,515.2	Ladder Peak
5	59.79	200	150.00	1,136.4	Ladder Peak
6	68.76	300	150.00	757.6	Ladder Peak
7	76.78	400	150.00	568.2	Ladder Peak
8	82.52	500	150.00	454.5	Ladder Peak
9	87.32	600	150.00	378.8	Ladder Peak
10	90.58	700	150.00	324.7	Ladder Peak
11	94.71	1,000	150.00	227.3	Ladder Peak
12	101.20	2,000	150.00	113.6	Ladder Peak
13	104.51	3,000	150.00	75.8	Ladder Peak
14	109.46	7,000	150.00	32.5	Ladder Peak
15	112.96	10,342	0.00	0.0	excluded peak
16	113.00	10,380	75.00	10.9	Upper Marker

Assay Class: High Sensitivity DNA Assay  
 Data Path: C:\...ents and Settings\Bioanalyzer\2014-03-21\2014-03-21\_007.xad

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**Electropherogram Summary Continued ...**



**Setpoint Deviations for sample 1 : 0hr Root 3C Shear 3X**

Height Threshold [FU] : 0.1

**Overall Results for sample 1 : 0hr Root 3C Shear 3X**

Number of peaks found: 30                      Corr. Area 1: 315.6  
 Noise: 0.2

**Peak table for sample 1 : 0hr Root 3C Shear 3X**

Peak	Aligned Migration Time [s]	Size [bp]	Conc. [pg/μl]	Molarity [pmol/l]	Observations
1	43.00	35	125.00	5,411.3	Lower Marker
2	45.38	51	1,032.18	30,695.5	
3	48.94	84	1,812.26	32,713.2	
4	50.47	98	4,040.68	62,356.4	
5	51.20	106	5,471.55	78,341.7	
6	53.06	126	26,050.68	312,796.2	
7	54.11	138	26,339.33	289,824.0	
8	55.93	158	45,571.14	438,060.6	
9	57.18	171	20,608.18	182,232.1	
10	58.23	183	22,893.77	189,699.1	
11	59.28	194	59,668.84	465,138.8	
12	62.35	229	31,785.51	210,760.7	
13	63.16	238	42,811.55	273,102.9	
14	64.85	256	59,488.26	351,487.0	
15	66.14	271	54,169.97	303,028.8	
16	67.56	287	36,659.94	193,795.5	
17	68.81	301	9,011.76	45,415.2	
18	70.47	321	14,343.13	67,638.7	
19	71.88	339	2,940.09	13,143.8	
20	72.85	351	3,623.78	15,642.6	
21	74.14	367	1,714.12	7,074.5	
22	75.96	390	2,194.09	8,529.1	

Assay Class: High Sensitivity DNA Assay  
 Data Path: C:\...ents and Settings\Bioanalyzer\2014-03-21\2014-03-21\_007.xad

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**Electropherogram Summary Continued ...**

**... Peak table for sample 1 : 0hr Root 3C Shear 3X**

Peak	Aligned Migration Time [s]	Size [bp]	Conc. [pg/μl]	Molarity [pmol/l]	Observations
23	76.69	399	4,011.37	15,239.0	
24	77.62	415	1,360.90	4,974.0	
25	78.46	429	830.66	2,931.5	
26	79.03	439	641.68	2,213.8	
27	80.16	459	1,010.61	3,336.9	
28	81.25	478	376.86	1,194.9	
29	87.19	597	112.36	285.0	
30	102.50	2,392	36.29	23.0	
31	103.79	2,784	123.35	67.1	
32	113.00	10,380	75.00	10.9	Upper Marker

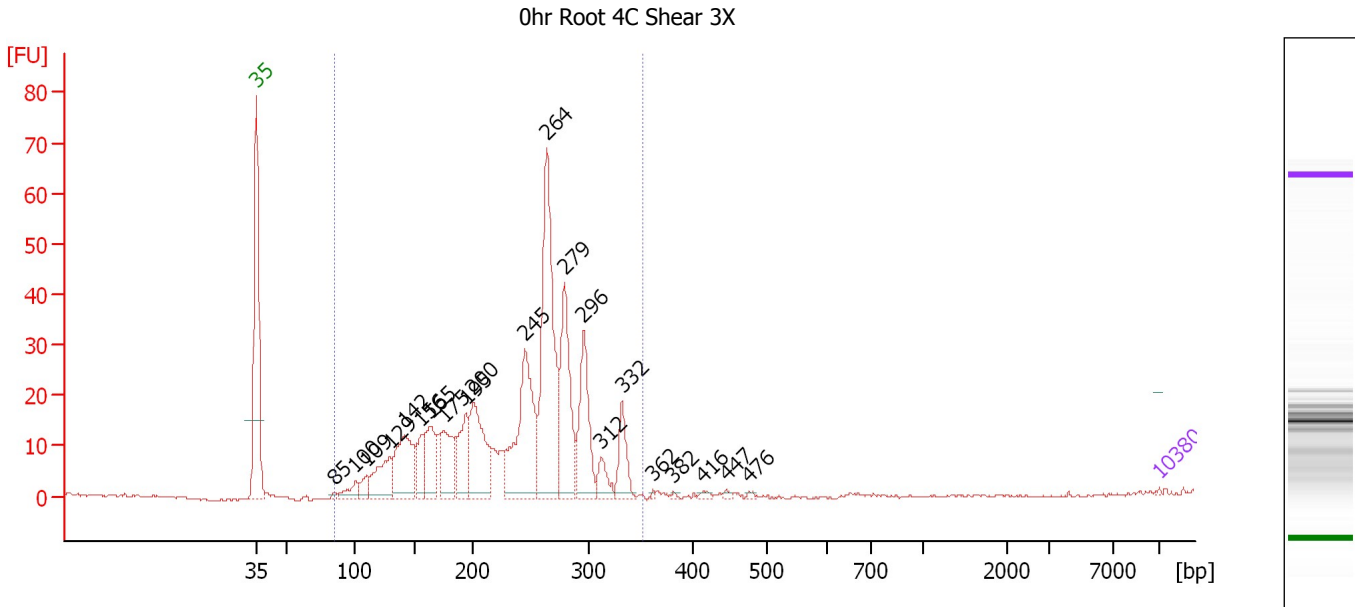
**Region table for sample 1 : 0hr Root 3C Shear 3X**

From [bp]	To [bp]	Average Size [bp]	Molarity [pmol/l]	Conc. [pg/μl]	Co Corr. lor Area	% of Total	Size distribution in CV [%]
81	433	230	3,599,863.0	487,604.50	315.6	100	26.5

Assay Class: High Sensitivity DNA Assay  
 Data Path: C:\...ents and Settings\Bioanalyzer\2014-03-21\2014-03-21\_007.xad

Created: 3/21/2014 3:19:04 PM  
 Modified: 3/21/2014 3:52:34 PM

**Electropherogram Summary Continued ...**



**Setpoint Deviations for sample 2 : 0hr Root 4C Shear 3X**

Height Threshold [FU] : 1

**Overall Results for sample 2 : 0hr Root 4C Shear 3X**

Number of peaks found: 21                      Corr. Area 1: 498.8  
 Noise: 0.2

**Peak table for sample 2 : 0hr Root 4C Shear 3X**

Peak	Aligned Migration Time [s]	Size [bp]	Conc. [pg/μl]	Molarity [pmol/l]	Observations
1	43.00	35	125.00	5,411.3	Lower Marker
2	49.08	85	356.95	6,344.9	
3	50.69	100	2,145.45	32,428.7	
4	51.52	109	1,879.71	26,056.1	
5	53.34	129	6,705.27	78,606.8	
6	54.49	142	10,713.03	114,362.3	
7	55.78	156	3,839.10	37,291.5	
8	56.56	165	6,308.87	58,076.0	
9	57.55	175	7,027.54	60,681.8	
10	59.29	195	6,930.82	53,990.1	
11	59.83	200	11,981.95	90,590.5	
12	63.84	245	18,739.51	115,828.4	
13	65.53	264	27,645.61	158,641.0	
14	66.90	279	13,845.32	75,120.3	
15	68.39	296	10,232.75	52,404.3	
16	69.75	312	2,547.53	12,356.5	
17	71.36	332	4,474.79	20,392.3	
18	73.76	362	165.20	690.7	
19	75.33	382	176.11	698.6	
20	77.69	416	374.89	1,366.0	
21	79.47	447	287.02	973.3	
22	81.16	476	232.67	740.1	

Assay Class: High Sensitivity DNA Assay  
 Data Path: C:\...ents and Settings\Bioanalyzer\2014-03-21\2014-03-21\_007.xad

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### Electropherogram Summary Continued ...

#### ... Peak table for sample 2 : 0hr Root 4C Shear 3X

Peak	Aligned Migration Time [s]	Size [bp]	Conc. [pg/ $\mu$ l]	Molarity [pmol/l]	Observations
23	113.00	10,380	75.00	10.9	Upper Marker

#### Region table for sample 2 : 0hr Root 4C Shear 3X

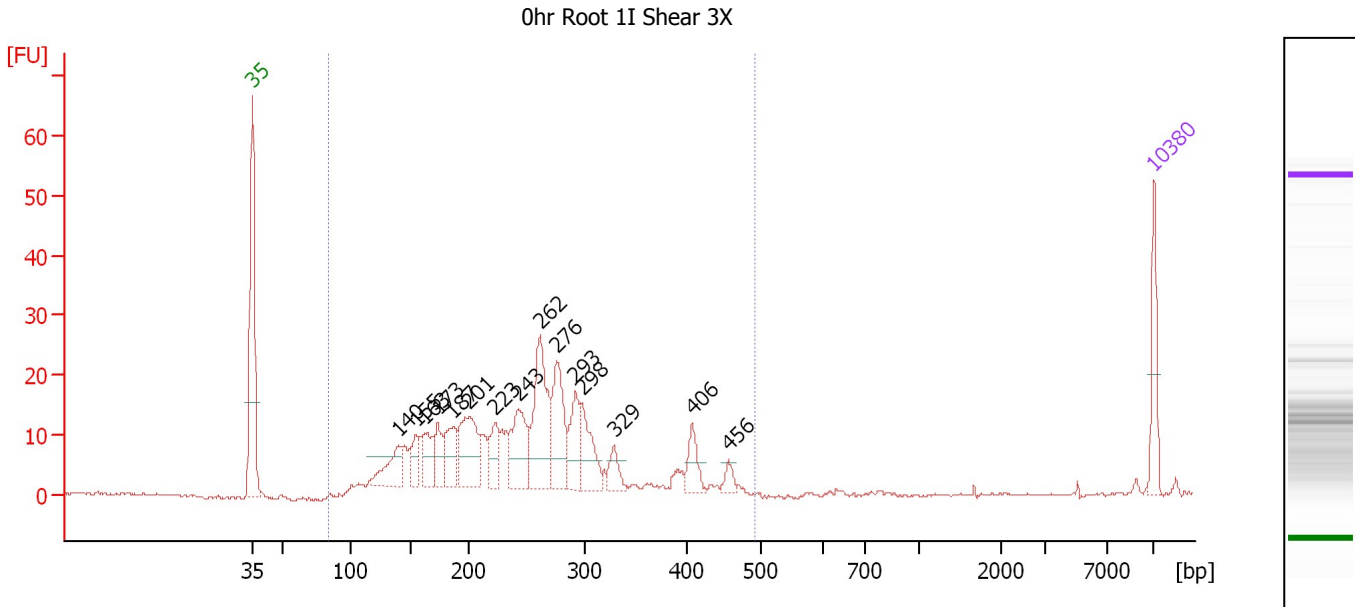
From [bp]	To [bp]	Average Size [bp]	Molarity [pmol/l]	Conc. [pg/ $\mu$ l]	Co Corr. for Area	% of Total	Size distribution in CV [%]
85	353	235	967,118.2	134,381.09	498.8	100	24.0



Assay Class: High Sensitivity DNA Assay  
 Data Path: C:\...ents and Settings\Bioanalyzer\2014-03-21\2014-03-21\_007.xad

Created: 3/21/2014 3:19:04 PM  
 Modified: 3/21/2014 3:52:34 PM

**Electropherogram Summary Continued ...**



**Overall Results for sample 3 : 0hr Root 1I Shear 3X**

Number of peaks found: 15                      Corr. Area 1: 376.0  
 Noise: 0.2

**Peak table for sample 3 : 0hr Root 1I Shear 3X**

Peak	Aligned Migration Time [s]	Size [bp]	Conc. [pg/μl]	Molarity [pmol/l]	Observations
1	43.00	35	125.00	5,411.3	Lower Marker
2	54.31	140	121.66	1,317.8	
3	55.67	155	63.07	617.0	
4	56.42	163	97.03	901.7	
5	57.37	173	83.03	725.2	
6	58.62	187	108.91	882.0	
7	59.86	201	204.82	1,546.0	
8	61.85	223	87.24	593.0	
9	63.67	243	175.91	1,095.8	
10	65.33	262	282.53	1,635.7	
11	66.61	276	193.52	1,062.2	
12	68.10	293	113.06	585.3	
13	68.60	298	131.86	669.9	
14	71.08	329	49.99	230.3	
15	77.13	406	62.50	233.2	
16	79.99	456	26.05	86.6	
17	113.00	10,380	75.00	10.9	Upper Marker

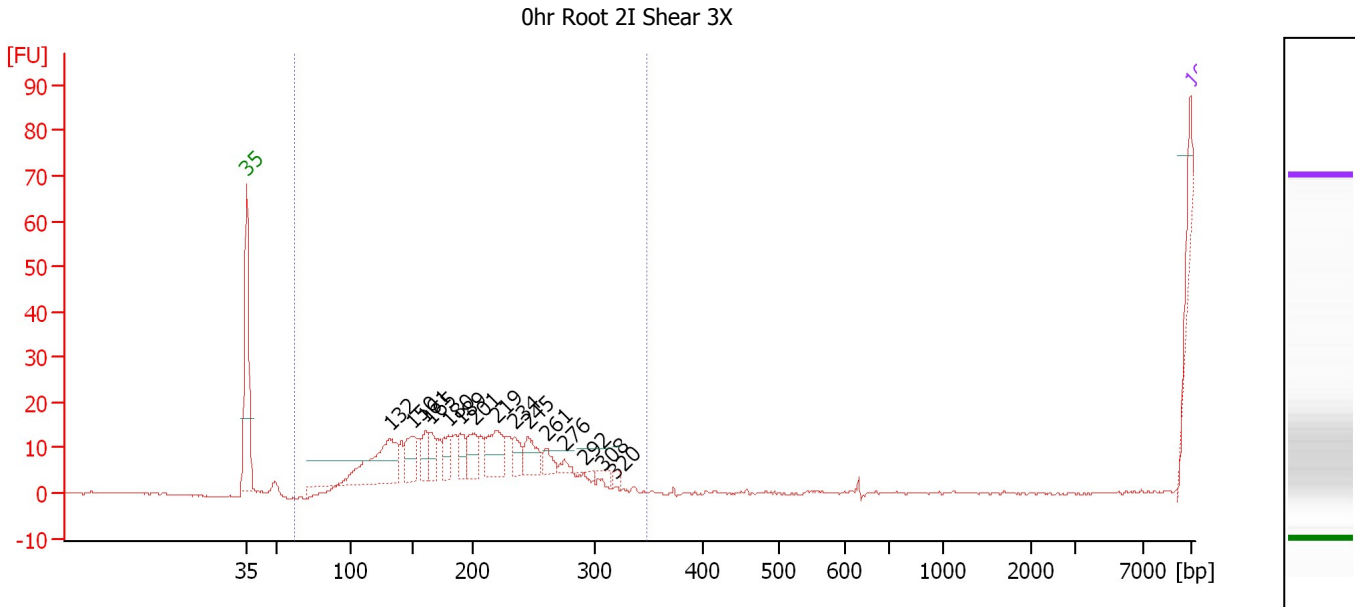
**Region table for sample 3 : 0hr Root 1I Shear 3X**

From [bp]	To [bp]	Average Size [bp]	Molarity [pmol/l]	Conc. [pg/μl]	Co Corr. for Area	% of Total	Size distribution in CV [%]
84	490	249	16,104.6	2,307.75	376.0	99	30.1

Assay Class: High Sensitivity DNA Assay  
 Data Path: C:\...ents and Settings\Bioanalyzer\2014-03-21\2014-03-21\_007.xad

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**Electropherogram Summary Continued ...**



**Overall Results for sample 4 : 0hr Root 2I Shear 3X**

Number of peaks found: 15                      Corr. Area 1: 0.0  
 Noise: 0.2

**Peak table for sample 4 : 0hr Root 2I Shear 3X**

Peak	Aligned Migration Time [s]	Size [bp]	Conc. [pg/μl]	Molarity [pmol/l]	Observations
1	43.00	35	125.00	5,411.3	Lower Marker
2	53.60	132	408.46	4,684.3	
3	55.26	150	155.49	1,567.2	
4	56.25	161	91.09	856.4	
5	56.56	165	80.68	742.6	
6	57.99	180	97.27	817.7	
7	58.82	189	70.77	566.3	
8	59.89	201	109.30	823.7	
9	61.47	219	181.28	1,255.9	
10	62.85	234	75.58	489.1	
11	63.84	245	113.17	699.4	
12	65.23	261	54.51	316.9	
13	66.57	276	25.96	142.7	
14	68.03	292	0.00	0.0	
15	69.38	308	0.00	0.0	
16	70.37	320	0.00	0.0	
17	113.00	10,380	75.00	10.9	Upper Marker

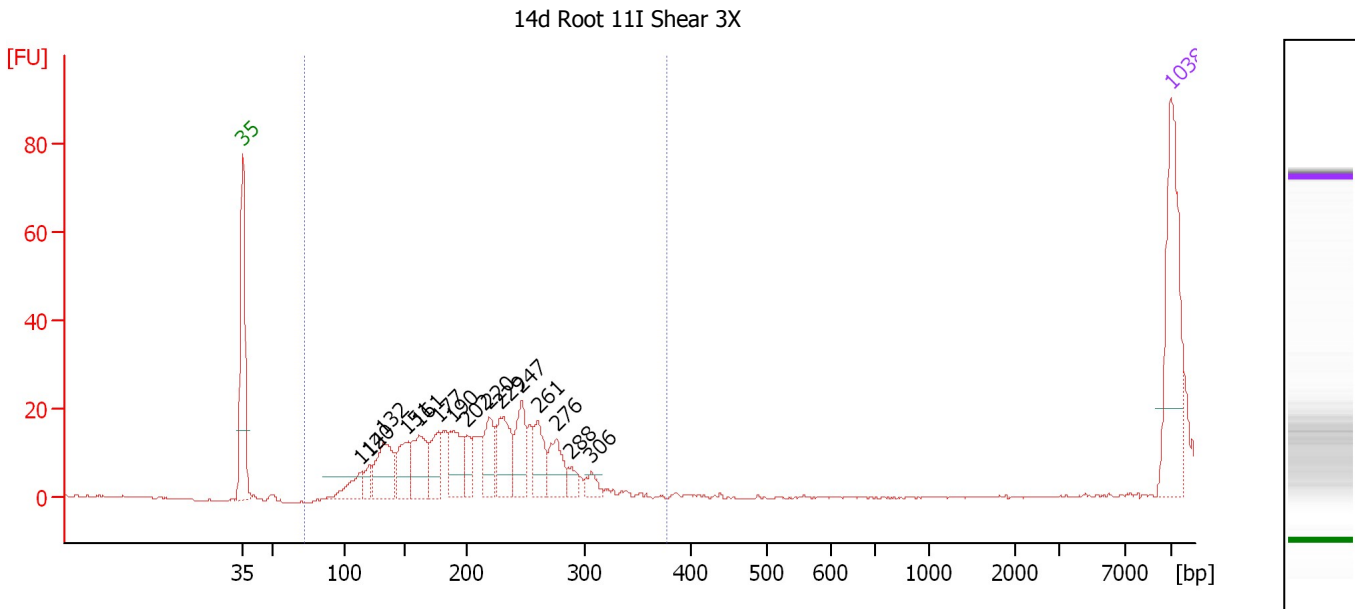
**Region table for sample 4 : 0hr Root 2I Shear 3X**

From [bp]	To [bp]	Average Size [bp]	Molarity [pmol/l]	Conc. [pg/μl]	Co Corr. for Area	% of Total	Size distribution in CV [%]
61	348	0	0.0	0.00	0.0	0	0.0

Assay Class: High Sensitivity DNA Assay  
 Data Path: C:\...ents and Settings\Bioanalyzer\2014-03-21\2014-03-21\_007.xad

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**Electropherogram Summary Continued ...**



**Overall Results for sample 5 : 14d Root 11I Shear 3X**

Number of peaks found: 15      Corr. Area 1: 179.5  
 Noise: 0.2

**Peak table for sample 5 : 14d Root 11I Shear 3X**

Peak	Aligned Migration Time [s]	Size [bp]	Conc. [pg/μl]	Molarity [pmol/l]	Observations
1	43.00	35	125.00	5,411.3	Lower Marker
2	51.93	114	24.08	320.6	
3	52.53	120	13.98	176.0	
4	53.57	132	55.88	642.1	
5	55.30	151	38.84	390.3	
6	56.27	161	51.03	479.1	
7	57.72	177	34.85	297.9	
8	58.88	190	44.16	352.1	
9	59.93	202	21.69	163.1	
10	61.58	220	40.30	277.7	
11	62.42	229	53.04	350.5	
12	63.99	247	43.56	267.4	
13	65.23	261	34.82	202.4	
14	66.64	276	34.04	186.6	
15	67.73	288	10.95	57.5	
16	69.26	306	10.63	52.6	
17	113.00	10,380	75.00	10.9	Upper Marker

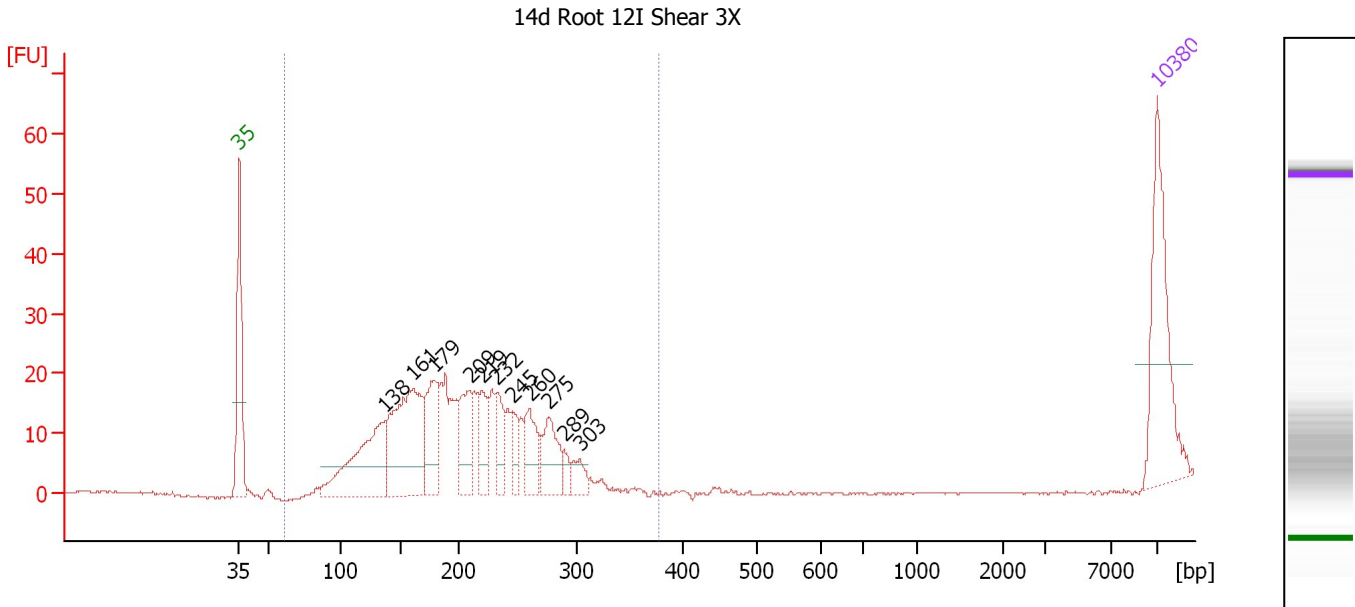
**Region table for sample 5 : 14d Root 11I Shear 3X**

From [bp]	To [bp]	Average Size [bp]	Molarity [pmol/l]	Conc. [pg/μl]	Co Corr. for Area	% of Total	Size distribution in CV [%]
72	377	203	2,108.5	264.49	179.5	98	20.7

Assay Class: High Sensitivity DNA Assay  
 Data Path: C:\...ents and Settings\Bioanalyzer\2014-03-21\2014-03-21\_007.xad

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 Modified: 3/21/2014 3:52:34 PM

**Electropherogram Summary Continued ...**



**Overall Results for sample 6 : 14d Root 12I Shear 3X**

Number of peaks found: 11                      Corr. Area 1: 358.7  
 Noise: 0.2

**Peak table for sample 6 : 14d Root 12I Shear 3X**

Peak	Aligned Migration Time [s]	Size [bp]	Conc. [pg/μl]	Molarity [pmol/l]	Observations
1	43.00	35	125.00	5,411.3	Lower Marker
2	54.14	138	130.51	1,431.9	
3	56.26	161	160.31	1,506.0	
4	57.89	179	64.77	547.9	
5	60.61	209	50.38	365.0	
6	61.51	219	38.74	267.9	
7	62.65	232	33.19	216.9	
8	63.83	245	19.72	122.0	
9	65.17	260	38.92	226.9	
10	66.55	275	42.11	231.7	
11	67.77	289	10.50	55.0	
12	69.03	303	15.45	77.2	
13	113.00	10,380	75.00	10.9	Upper Marker

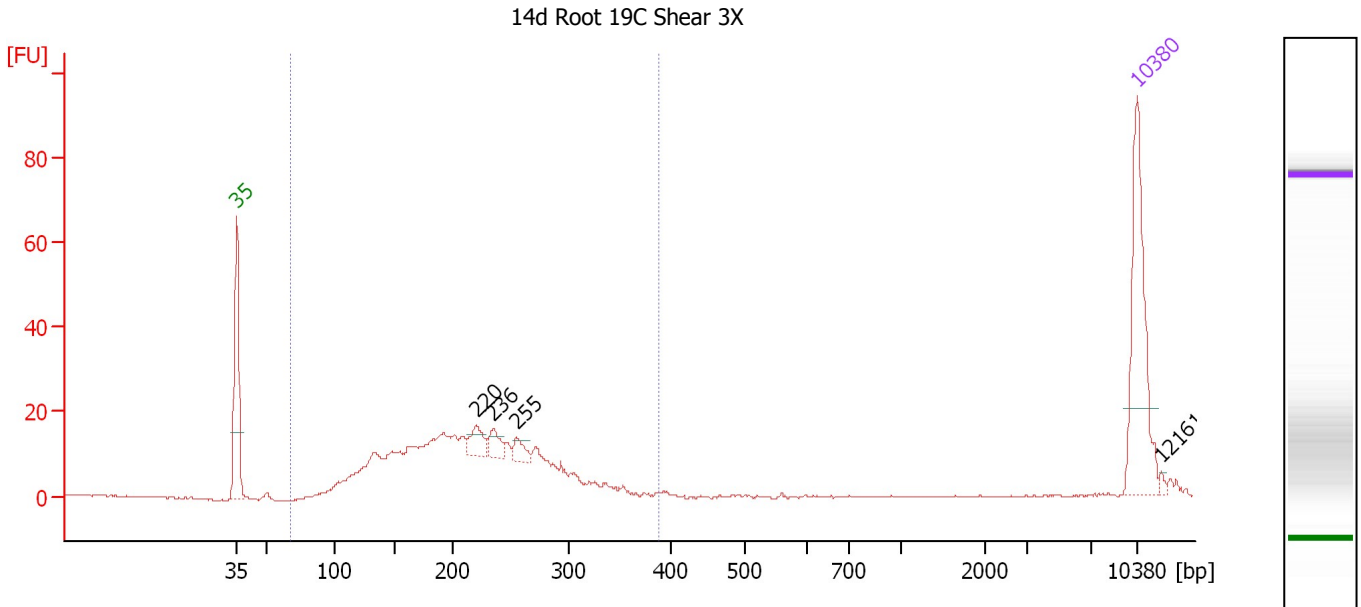
**Region table for sample 6 : 14d Root 12I Shear 3X**

From [bp]	To [bp]	Average Size [bp]	Molarity [pmol/l]	Conc. [pg/μl]	Co Corr. lor Area	% of Total	Size distribution in CV [%]
61	377	198	5,369.8	642.92	358.7	100	24.5

Assay Class: High Sensitivity DNA Assay  
 Data Path: C:\...ents and Settings\Bioanalyzer\2014-03-21\2014-03-21\_007.xad

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**Electropherogram Summary Continued ...**



**Overall Results for sample 7 : 14d Root 19C Shear 3X**

Number of peaks found: 4                      Corr. Area 1: 349.3  
 Noise: 0.2

**Peak table for sample 7 : 14d Root 19C Shear 3X**

Peak	Aligned Migration Time [s]	Size [bp]	Conc. [pg/μl]	Molarity [pmol/l]	Observations
1	43.00	35	125.00	5,411.3	Lower Marker
2	61.61	220	19.14	131.7	
3	62.98	236	14.31	92.1	
4	64.76	255	12.16	72.2	
5	113.00	10,380	75.00	10.9	Upper Marker
6	114.87	12,161	0.00	0.0	

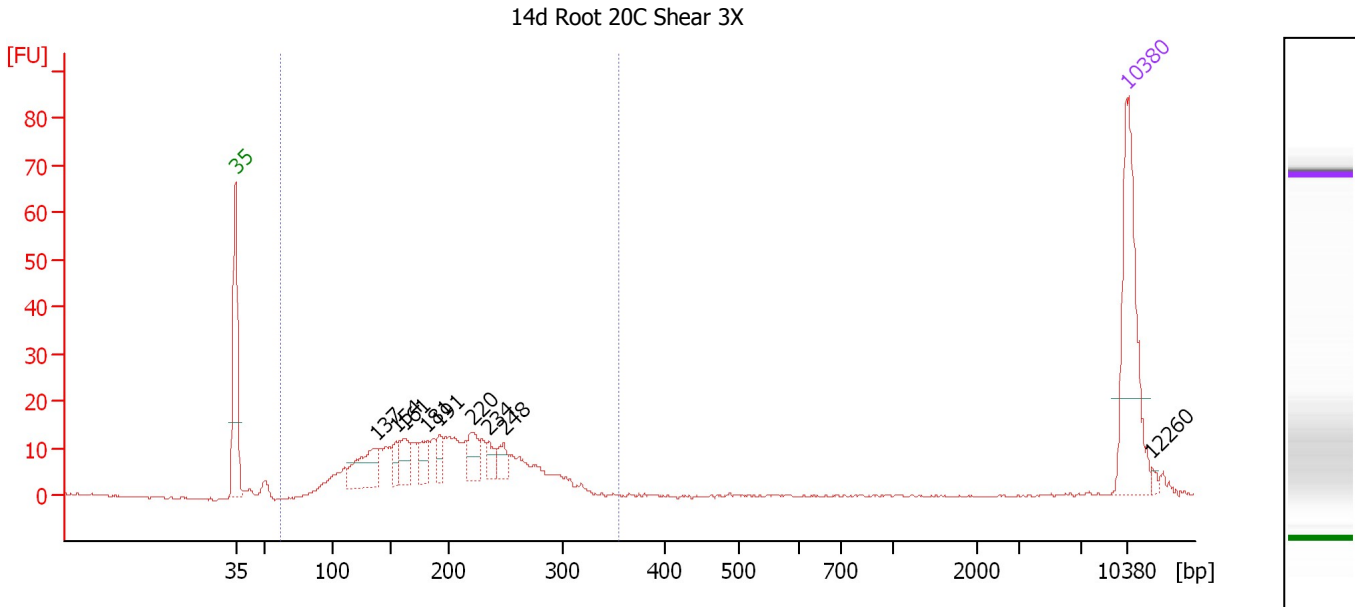
**Region table for sample 7 : 14d Root 19C Shear 3X**

From [bp]	To [bp]	Average Size [bp]	Molarity [pmol/l]	Conc. [pg/μl]	Co Corr. lor Area	% of Total	Size distribution in CV [%]
68	387	212	3,917.8	491.57	349.3	98	26.4

Assay Class: High Sensitivity DNA Assay  
 Data Path: C:\...ents and Settings\Bioanalyzer\2014-03-21\2014-03-21\_007.xad

Created: 3/21/2014 3:19:04 PM  
 Modified: 3/21/2014 3:52:34 PM

**Electropherogram Summary Continued ...**



**Overall Results for sample 8 : 14d Root 20C Shear 3X**

Number of peaks found: 9                      Corr. Area 1: 298.4  
 Noise: 0.2

**Peak table for sample 8 : 14d Root 20C Shear 3X**

Peak	Aligned Migration Time [s]	Size [bp]	Conc. [pg/μl]	Molarity [pmol/l]	Observations
1	43.00	35	125.00	5,411.3	Lower Marker
2	54.02	137	47.20	523.2	
3	55.61	154	13.92	136.8	
4	56.24	161	23.17	218.0	
5	58.04	181	17.46	146.3	
6	59.00	191	13.27	105.1	
7	61.56	220	22.75	156.9	
8	62.81	234	11.29	73.2	
9	64.07	248	12.75	78.0	
10	113.00	10,380	75.00	10.9	Upper Marker
11	114.97	12,260	0.00	0.0	

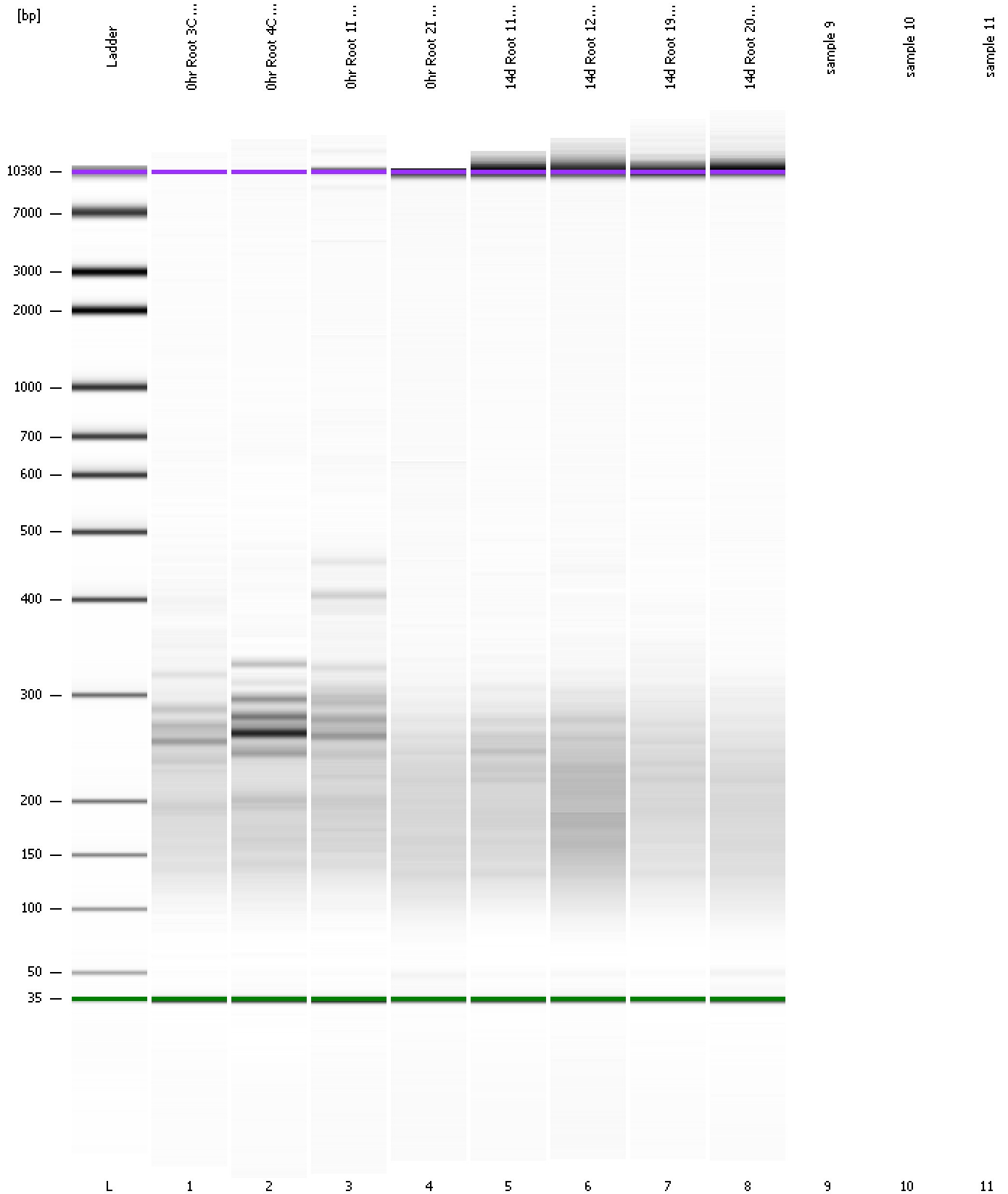
**Region table for sample 8 : 14d Root 20C Shear 3X**

From [bp]	To [bp]	Average Size [bp]	Molarity [pmol/l]	Conc. [pg/μl]	Co Corr. lor Area	% of Total	Size distribution in CV [%]
62	354	197	3,678.4	426.35	298.4	97	27.1

Assay Class: High Sensitivity DNA Assay  
Data Path: C:\...ents and Settings\Bioanalyzer\2014-03-21\2014-03-21\_007.xad

Created: 3/21/2014 3:19:04 PM  
Modified: 3/21/2014 3:52:34 PM

**Gel Image**

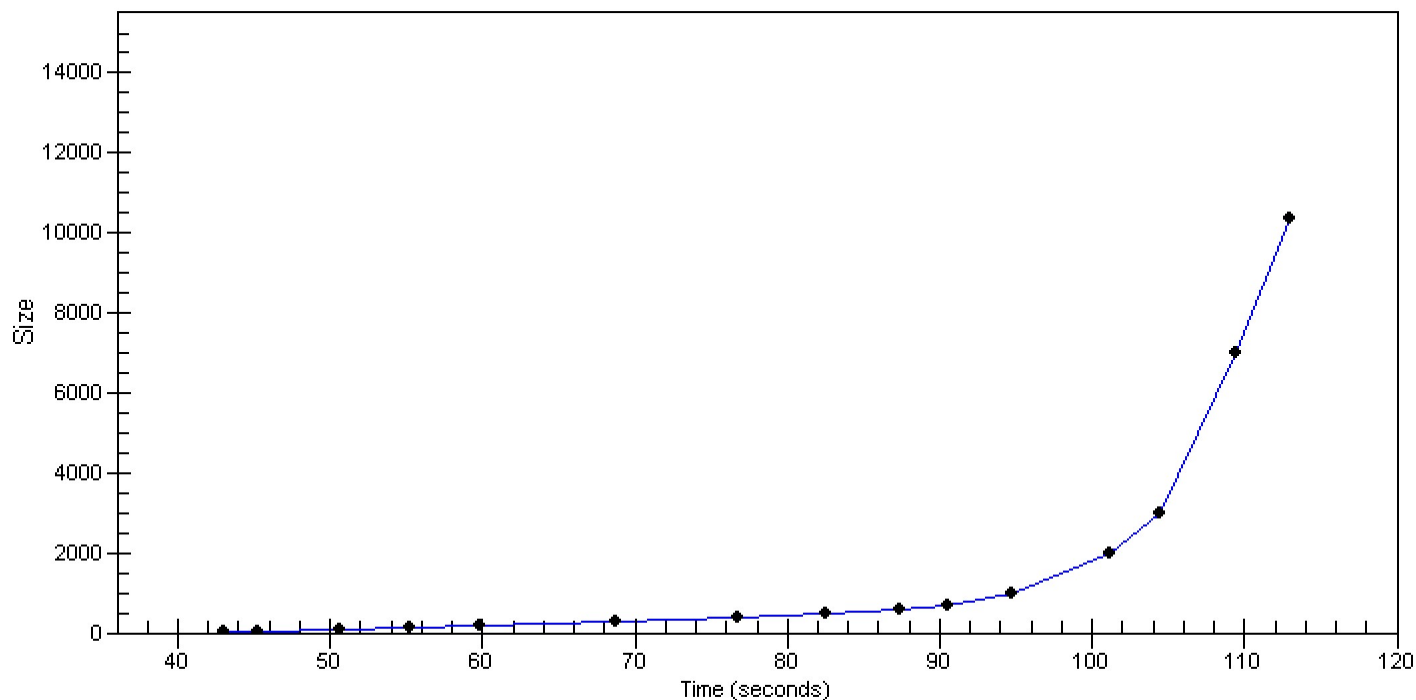


Assay Class: High Sensitivity DNA Assay  
Data Path: C:\...ents and Settings\Bioanalyzer\2014-03-21\2014-03-21\_007.xad

Created: 3/21/2014 3:19:04 PM  
Modified: 3/21/2014 3:52:34 PM

**Curves**

**Standard Curve**





Assay Class: High Sensitivity DNA Assay  
Data Path: C:\...ents and Settings\Bioanalyzer\2014-03-21\2014-03-21\_007.xad

Created: 3/21/2014 3:19:04 PM  
Modified: 3/21/2014 3:52:34 PM

**Invalid Samples**

Sample 9 has not been run, no results available.

Sample 10 has not been run, no results available.

Sample 11 has not been run, no results available.

Assay Class: High Sensitivity DNA Assay  
 Data Path: C:\...ents and Settings\Bioanalyzer\2014-03-21\2014-03-21\_007.xad

Created: 3/21/2014 3:19:04 PM  
 Modified: 3/21/2014 3:52:34 PM

**Run Logbook**

Description	Number	Source	Category	Sub Category	Time	Time Zone	User	Host
Run ended on port 1 (Number of wells acquired: 9)		Instrument	Run		3/21/2014 3:51:48 PM	(GMT --07:00) Pacific Standard Time	UC Davis	D8XSMGH1
Run started on port 1 (File: C:\Documents and Settings\Bioanalyzer\2014-03-21\2014-03-21_007.xad)		Instrument	Run		3/21/2014 3:19:10 PM	(GMT --07:00) Pacific Standard Time	UC Davis	D8XSMGH1
Product Number : G2938B		Instrument	Run		3/21/2014 3:19:10 PM	(GMT --07:00) Pacific Standard Time	UC Davis	D8XSMGH1
Name :		Instrument	Run		3/21/2014 3:19:10 PM	(GMT --07:00) Pacific Standard Time	UC Davis	D8XSMGH1
Vendor : Agilent Technologies		Instrument	Run		3/21/2014 3:19:09 PM	(GMT --07:00) Pacific Standard Time	UC Davis	D8XSMGH1
Serial# : DE13701086		Instrument	Run		3/21/2014 3:19:09 PM	(GMT --07:00) Pacific Standard Time	UC Davis	D8XSMGH1
Firmware : C.01.069		Instrument	Run		3/21/2014 3:19:09 PM	(GMT --07:00) Pacific Standard Time	UC Davis	D8XSMGH1
Cartridge : Electrode		Instrument	Run		3/21/2014 3:19:09 PM	(GMT --07:00) Pacific Standard Time	UC Davis	D8XSMGH1