

Figure 1

All Molecules pH MP % Change SEC

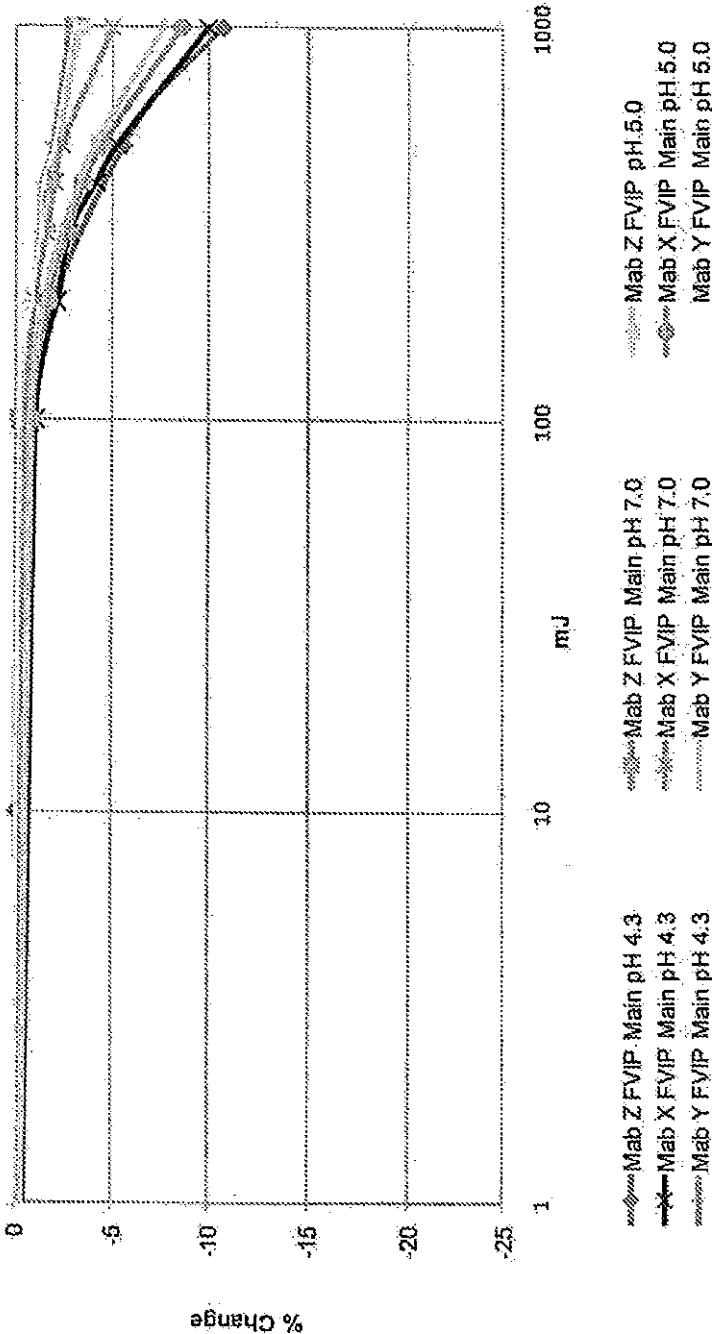


Figure 2

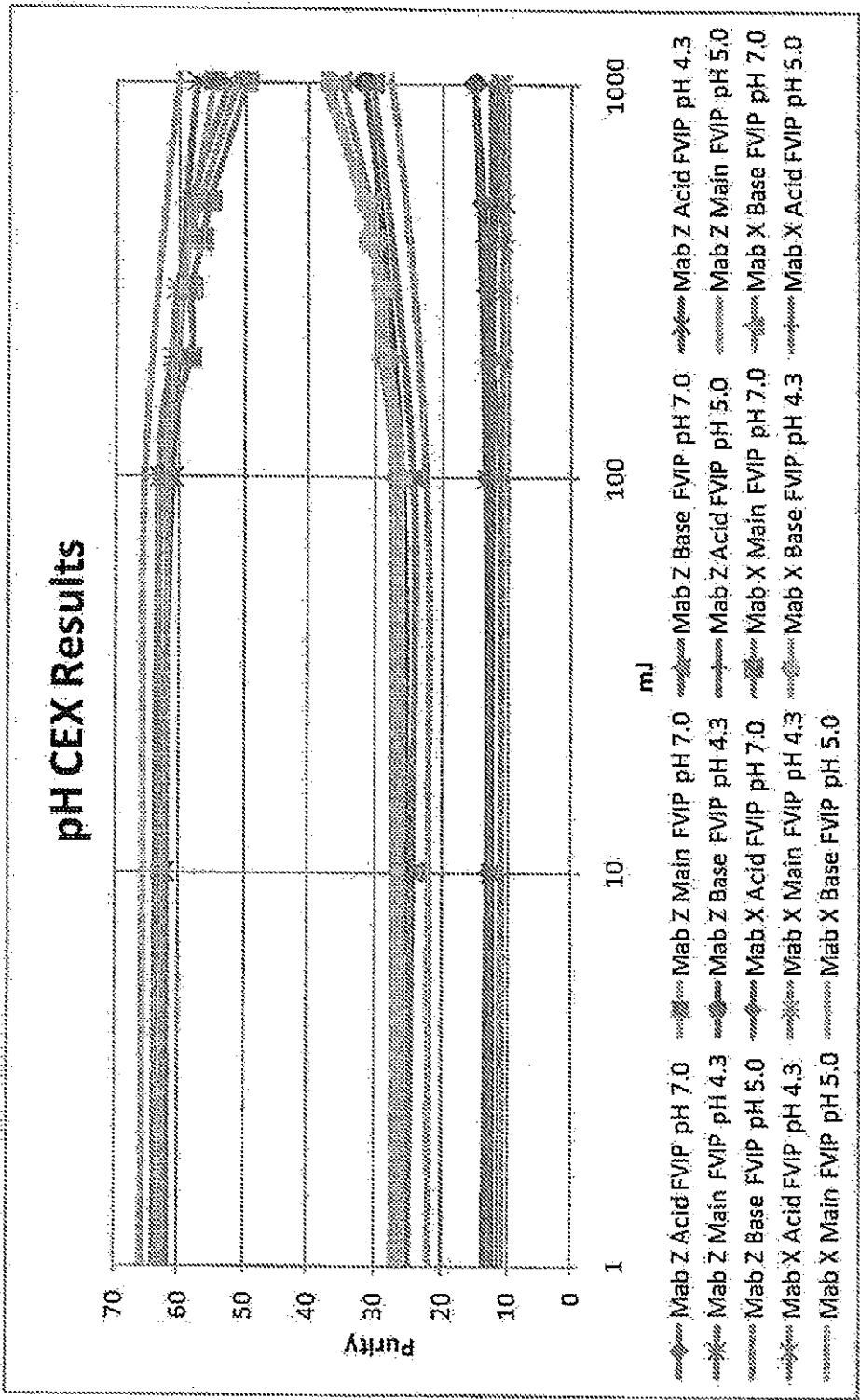
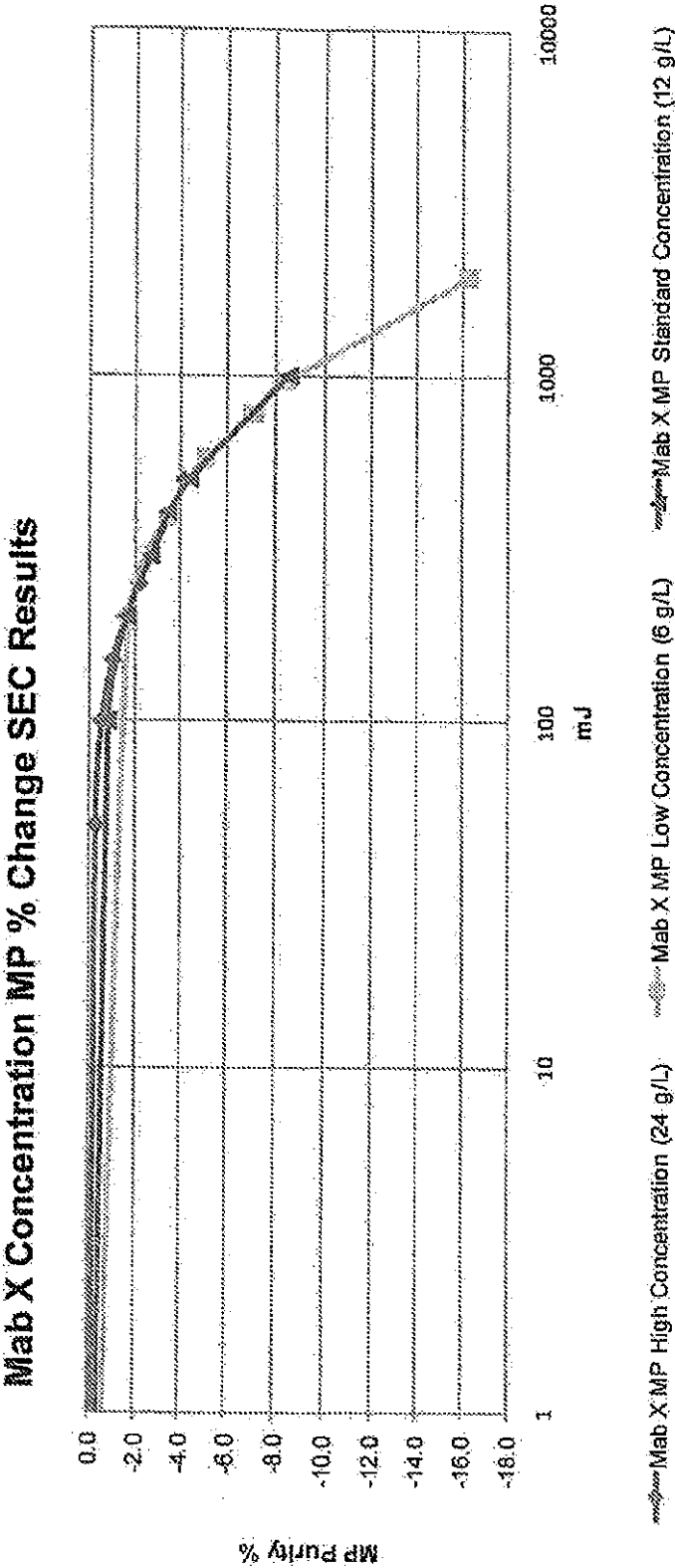
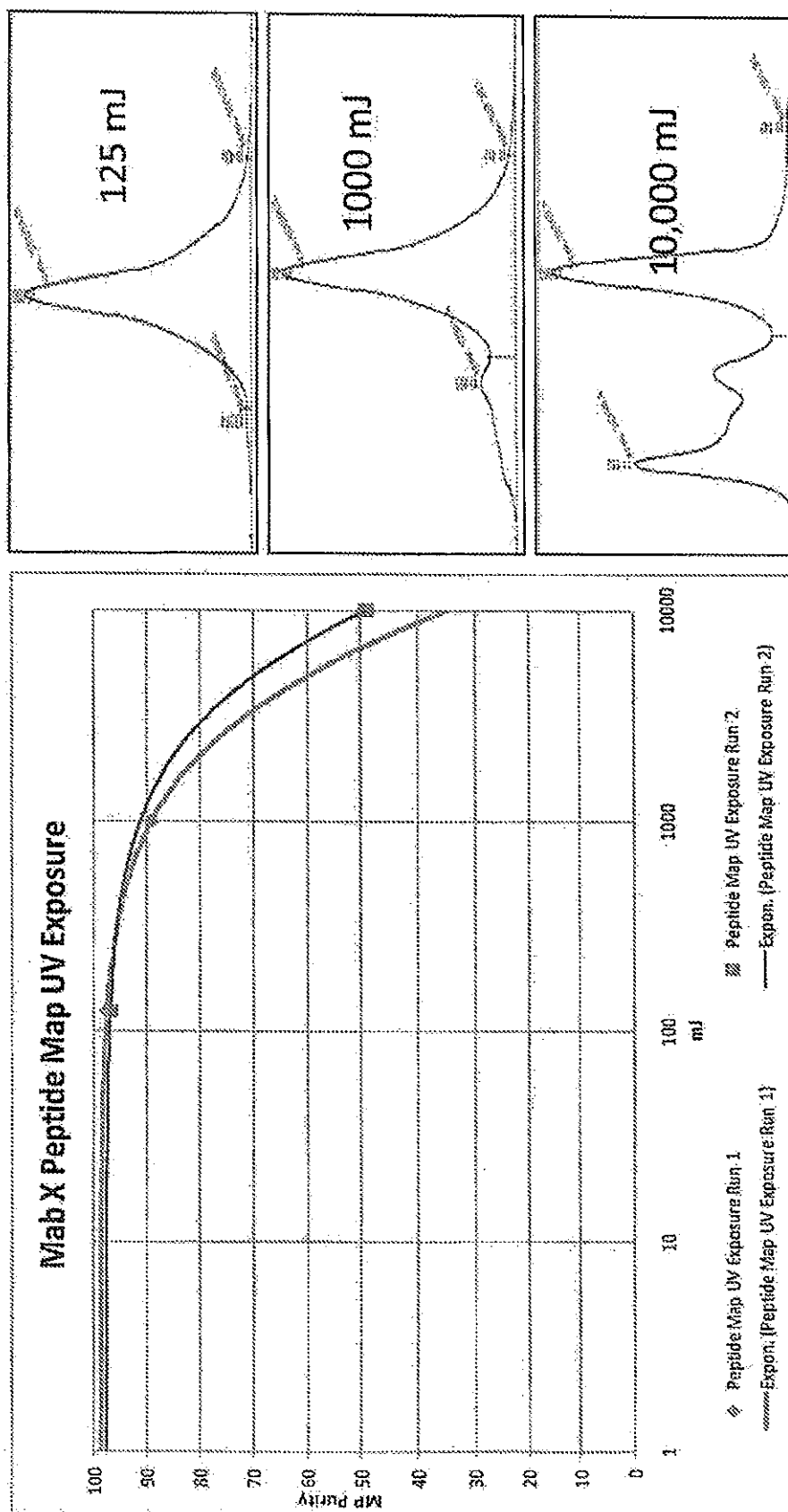


Figure 5



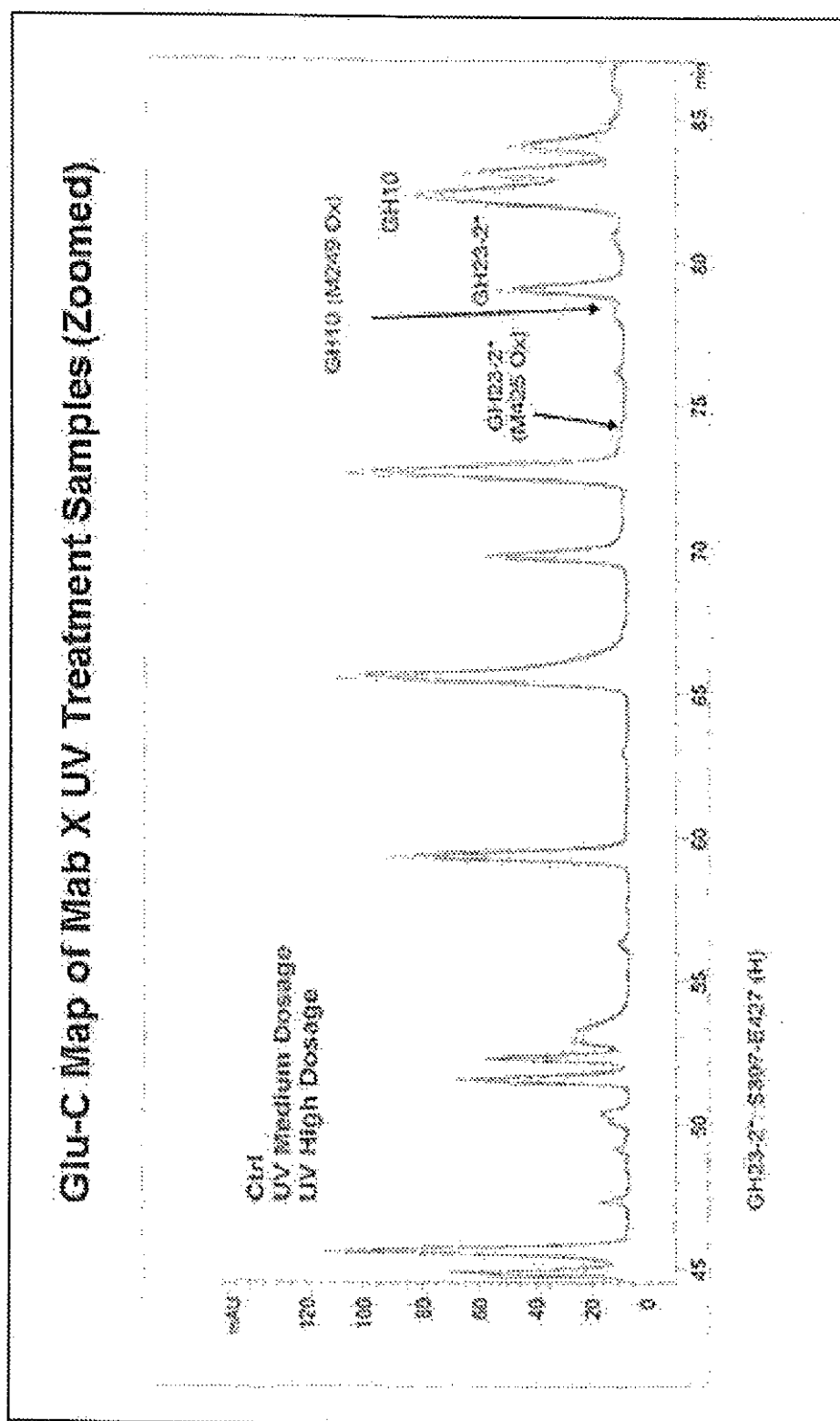
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Figure 6



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Figure 7



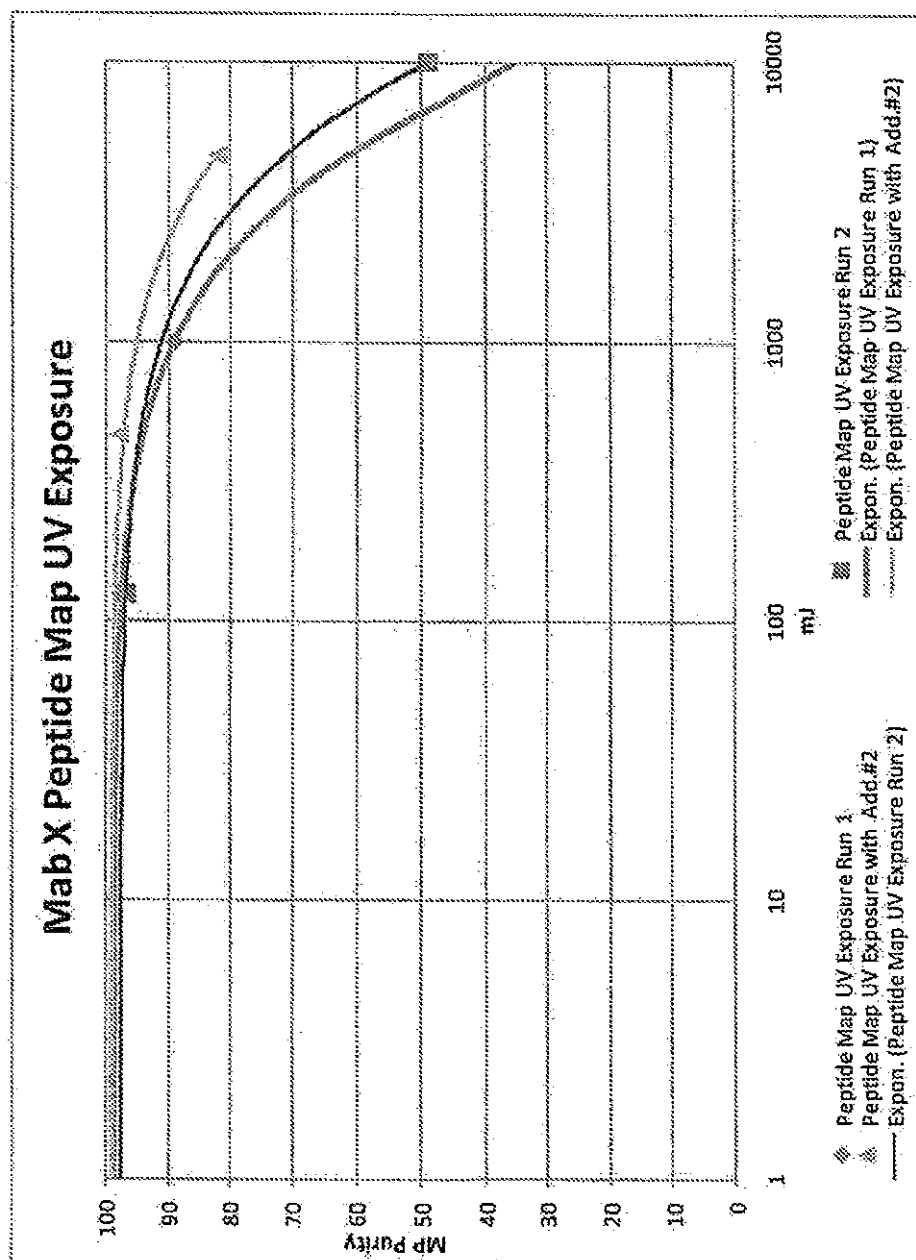
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Figure 8

Peptide Mapping Results				
	Control (0mJ)	Medium (~15mJ)	High (~150mJ)	Extreme (~1000mJ)
Met-249	2.4%	2.9%	6.8%	35.6%
Ox				
Met-425	1.1%	1.4%	4.2%	29.3%
Ox				
In-vitro ElicActivity				
Sample ID	% Relative Potency			
Control (0mJ)	86			
Control (125mJ)	86			
Control (375mJ)	86			
Control w/ Add 1 (0mJ)	89			
Control w/ Add 1 (125mJ)	87			
Control w/ Add 1 (375mJ)	89			

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Figure 9



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Figure 10
Exposure vs. xmuLV Inactivation

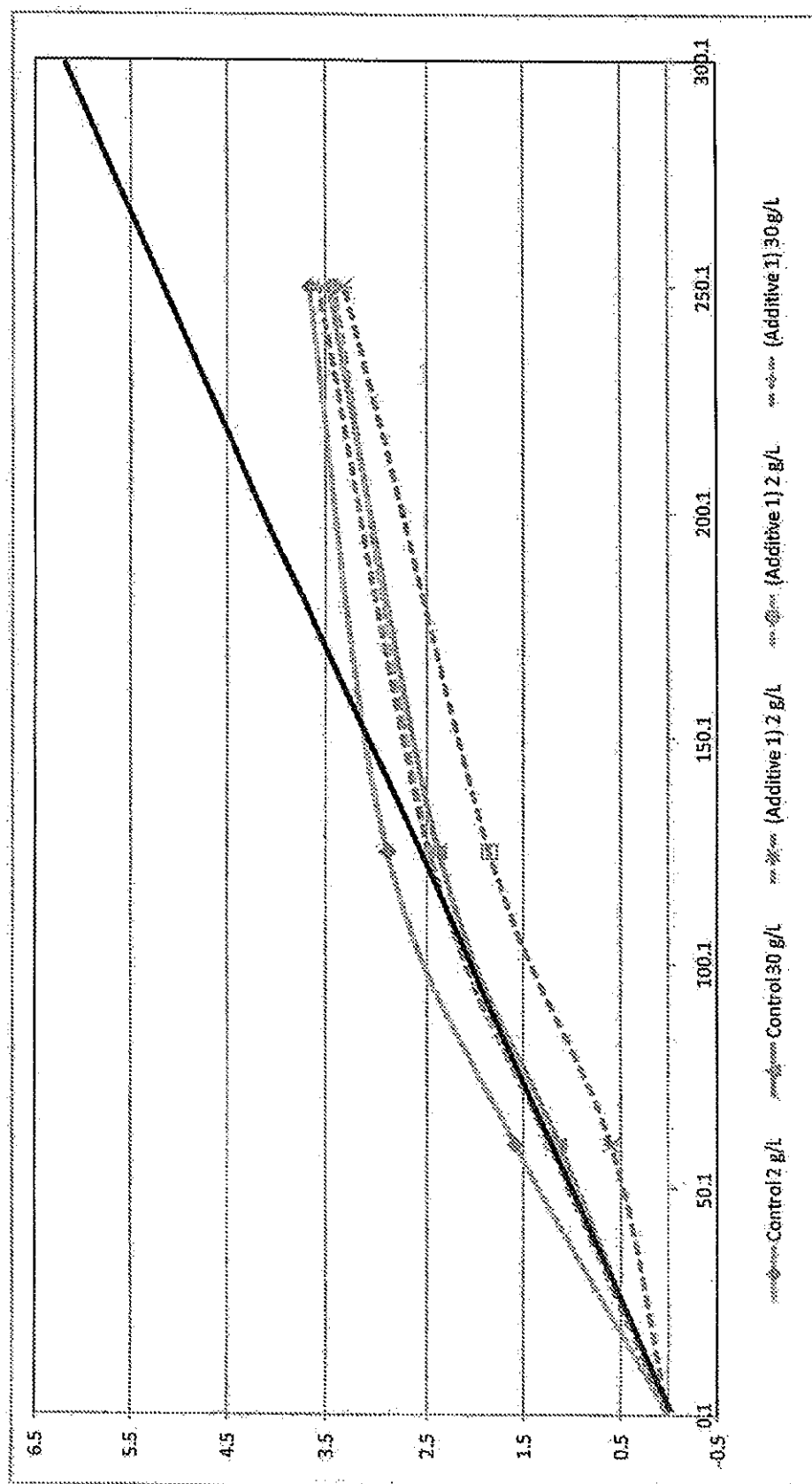


Figure 11a

Literature Reference for Required
UV-C Doses for Inactivation – DNA viruses

Family ^a	Measured UV ₂₅₄ D ₉₀ (J/m ²) ^b	Genome size range ^c	Measured or predicted S _{0.5} (J/m ² ·kb) ^d	Representative viruses ^e	Predicted UV ₂₅₄ D ₉₀ range for entire family (J/m ²) ^f
dsDNA viruses					
<i>Adenoviridae</i>	130 (100-220)	26-45	9,200 (7,300-16,000)	SAIV-7, HAdV-5, -40, -41	100-180
<i>Asfarviridae</i>		170-190	8,700 ^g		13-15
<i>Herpesviridae</i>	19 (6.2-26) 2nd 140 ^h (38-490)	125-240	6,400 (1,600-9,600) 2nd 54,000 ^g (12,000-120,000)	HRV-1, -2, -5, SuHV-1, MuHV-1, EHV-1	13-26 2nd 110-220 ^k
<i>Iridoviridae</i>	16	98-170	5,100	EV-3	15-26
<i>Papillomaviridae</i>		6.8-8.4	5,100 ^g		300-300
<i>Polyomaviridae</i>	250	4.7-5.3	2,600	MPV, SV40	250-280
<i>Poxviridae</i>	11	130-300	4,100	VACV	6.8-16
ssDNA viruses					
<i>Circoviridae</i>		1.8-2.3	46 ^p		20-26
<i>Hepadnaviridae</i>		3.0-3.3	46 ^p		14-15
<i>Parvoviridae</i>	9.2 (8.3-10.0)	4-6	46 (43-50)	KRV, MMV, H-1PV	77-12

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Figure 11b

Literature Reference for Required
UV-C Doses for Inactivation – RNA viruses

Family ^a	Measured D_{90} (J/m ²)	Genome size range	Measured or predicted S _{0.5} (J/m ² · kb)	Representative virus(es)	Predicted D_{90} range for entire family (J/m ²)
dRNA viruses					
<i>Hepadnaviridae</i>	120 (110-170)	3.7-6.2	1,400 (1,200-1,600)	HPNV	110-120
<i>Reoviridae</i>	89 (46-123)	18.6-26.4	3,300 (1,700-5,800)	MRV-1, -2, -3, RV-A, KENV-10, -91	72-100
ssRNA viruses					
<i>Arnaviridae</i> ^a	34	11	140 p	BDV	23
<i>Budaviridae</i> ^a		8.9	200		34
<i>Bunyviridae</i> ^a		11-19	140 p		7.4-13
<i>Deltavirina</i> ^a		17	140 p		82
<i>Flaviviridae</i> ^a		19	140 p		2.2
<i>Ochlospoviridae</i> ^a	7.5 (4.8-10)	10-13	110 (70-140)	FLUAV, ISAV	7.3-11
<i>Picornaviridae</i> ^a	11 (10-12)	15-16	170 (150-180)	NDV, MeV	11
<i>Rhabdoviridae</i> ^a	4.3 (1.1-23)	11-13	31 (12-200)	VSV, RABV, VHSV	3.4-4.6
<i>Arctoviridae</i> ^a		13-18	295 p		18-23
<i>Asarviridae</i> ^a		6.8-7.9	295 p		37-44
<i>Caliciviridae</i> ^a		7.4-8.3	295 p		26-40
<i>Circoviridae</i> ^a		20-31	78	BEV	2.5-3.9
<i>Parvoviridae</i> ^a	3.3	8.6-12	295 p		23-31
<i>“HEV-like” viruses</i> ^a		7.2	295 p		41
<i>Rotaviridae</i> ^a	140	4.5	630	SBNV	140
<i>Reoviridae</i> ^a	48 (25-70)	7-6.5	370 (100-540)	PRV-1, -2, -3, B-A, -11, CV-A9, -31, -35, THEAV, EMCV	44-53
dsRNA viruses					
<i>Topoviridae</i> ^a	10 (7.3-23)	9-12	220 (83-260)	SINV, VEEV, SFV	18-24
<i>Reoviridae</i> ^a	89 (68-120)	7-11	740 (620-980)	MLV, PolV, MeMSV, RSV	67-130

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Figure 12

Predicted LRV vs. Dose

Virus Family	Sensitivity	Measured UV254 D37 (J/m ²)	Calculated UV254 4LRV (J/m ²)	Calculated UV254 6LRV (J/m ²)	Calculated UV254 8LRV (J/m ²)	Calculated UV254 12LRV (J/m ²)	Calculated UV254 4LRV (mJ/cm ²)	Calculated UV254 6LRV (mJ/cm ²)	Calculated UV254 8LRV (mJ/cm ²)	Calculated UV254 12LRV (mJ/cm ²)
Adenoviridae	Low	220	2024	3036	4048	6072	202.4	303.6	404.8	607.2
	Median	130	1196	1794	2392	3588	119.6	179.4	239.2	358.8
	High	100	920	1380	1840	2760	92	138	184	276
Polioviridae	Median	250	2300	3450	4600	6900	230	345	460	690
	Low	10	92	138	184	276	9.2	13.8	18.4	27.6
	Median	9.2	84.84	126.96	169.28	253.92	8.464	12.606	16.928	25.392
Minute virus of mice (MMV)	High	8.6	79.12	118.88	158.24	237.36	7.912	11.868	15.824	23.736
	Low	120	1104	1656	2208	3312	110.4	165.6	220.8	331.2
	Median	89	818.8	1228.2	1637.6	2456.4	81.88	122.82	163.76	245.64
Retroviridae (muLV)	High	88	809.6	1214.4	1619.2	2428.8	80.96	121.44	161.92	242.88
	Low	13	119.6	179.4	239.2	358.8	11.96	17.94	23.92	35.88
	Median	10.2	93.84	140.76	187.68	281.52	9.384	14.076	18.768	28.152
Cache Valley Virus (CVV)	High	7.4	68.08	102.12	136.16	204.24	6.808	10.212	13.616	20.424

$n0 = 100$
 $D = \text{received dose}$
 $n/n0 = \% \text{ undamaged}$
 $\text{Curve: } x = \log_{10}(n/n0), y = \text{dose}$
 $\text{Slope} = (-1/2.3) * (D37 / (D37/2.3))$
 $= - \log_{10}(n/n0) = (1/2.3) * (D/D37)$
 $D37 = (1/\text{slope}) * (-1/2.3) = (D/\text{slope} / 2.3)$
 $\text{Protection Factor} = D37 / \text{treated} / D37 \text{ untreated}$

$\ln(n/n0) = (kD)$
 $k = 1/(D37)$
 $\log_{10}(x) = (\log_e(x) / \log_e(10))$
 $\log_{10}(x) = (\ln(x) / 2.3)$
 $\text{LRV} = - \log_{10}(n/n0) = - (\ln(n/n0) / 2.3) = (1/2.3) * (D/D37)$
 $D = 2.3 * D37 * \text{LRV}$

Figure 13

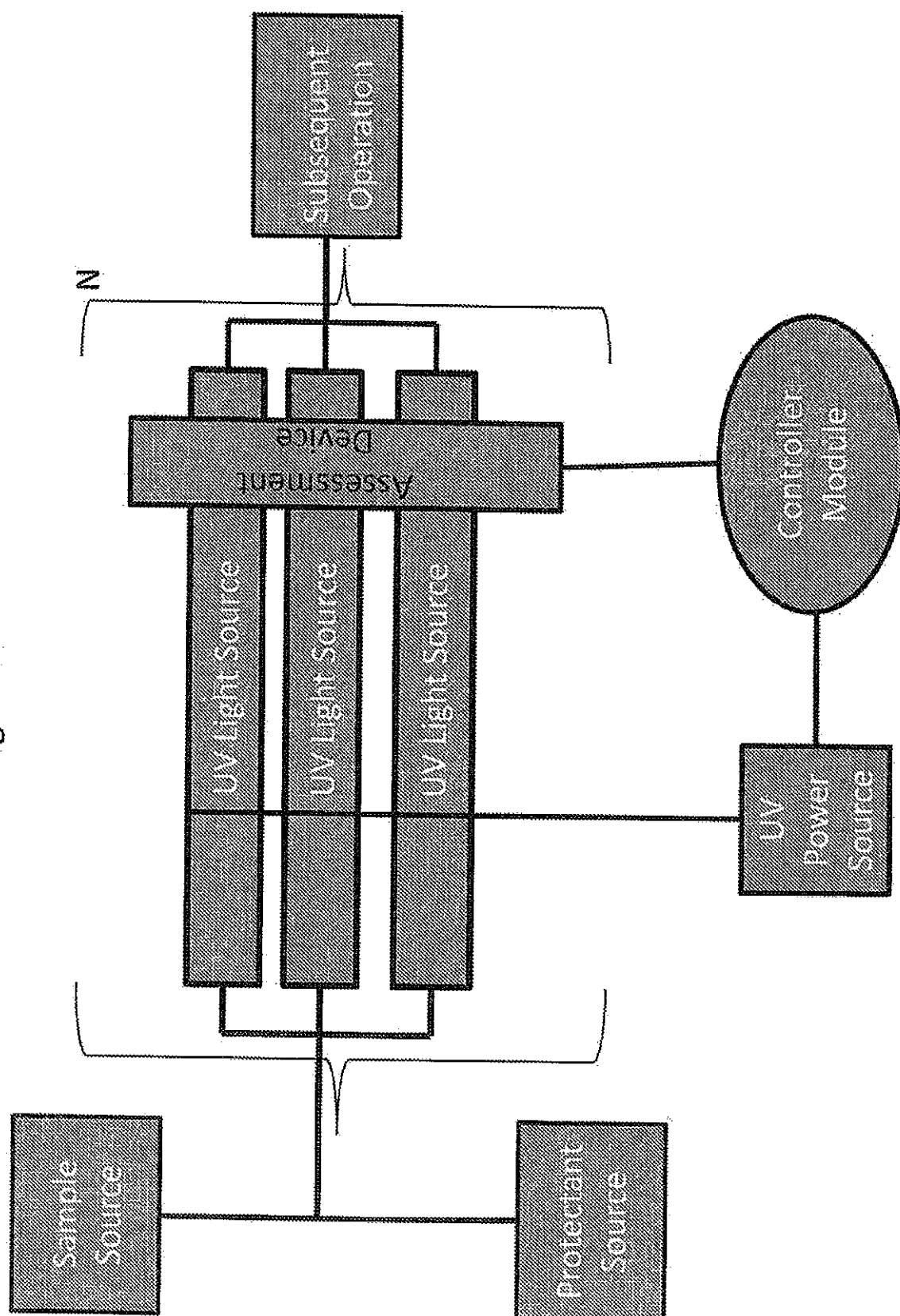
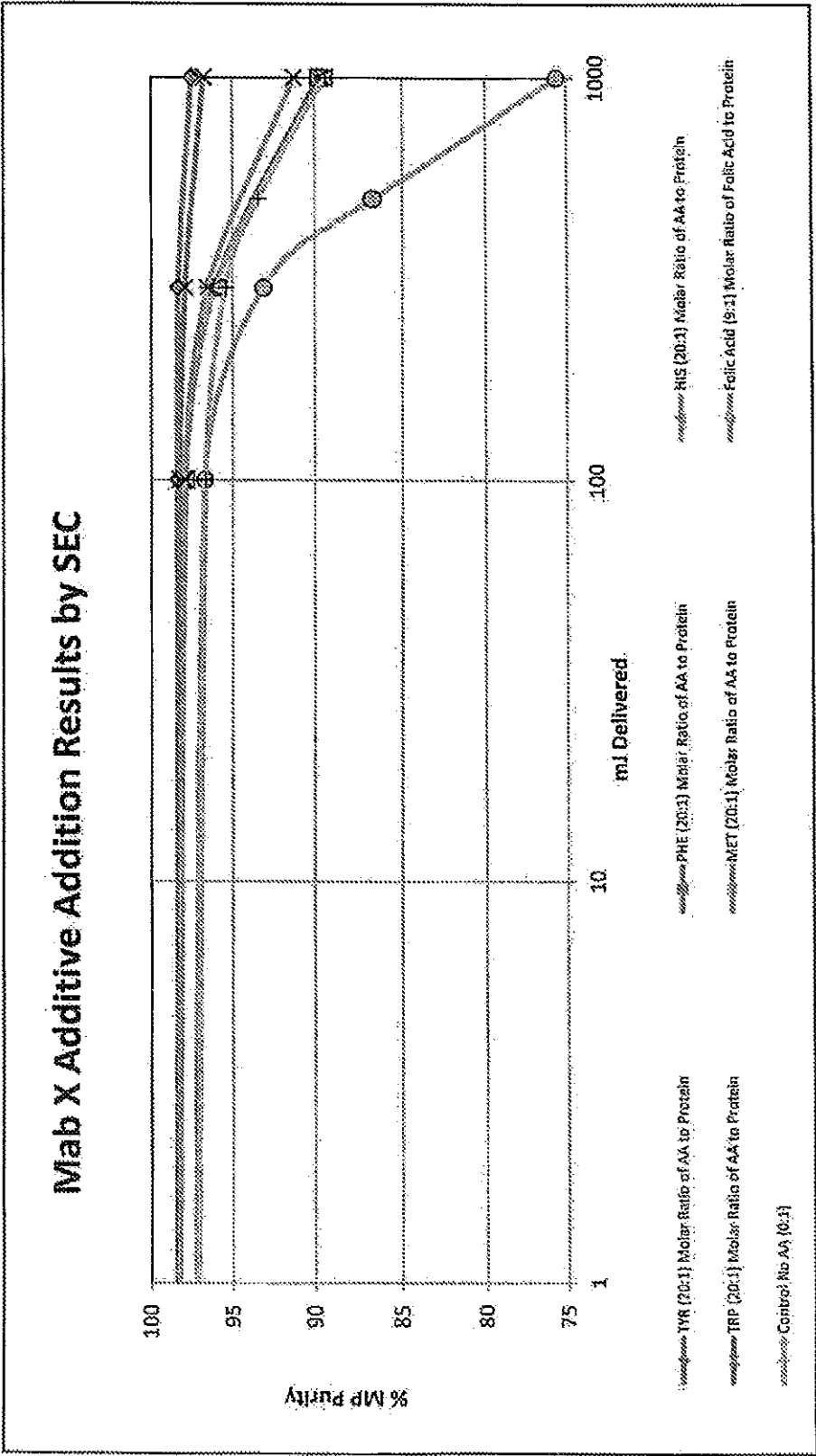


Figure 14



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Figure 15

