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**Toxicology of Tobacco Products:  
Sister Chromatid Exchange Genotoxicity**

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***Labstat International ULC  
Test Report***



***Prepared for  
R.J. Reynolds Tobacco Corporation***

**Project Code: M125**

**Original Date: April 21, 2010  
Revision 1 Date: December 22, 2010**

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## 1 Use of Labstat's<sup>1</sup> Analytical Reports<sup>2</sup>

Labstat International ULC is a recognized centre of analytical excellence related to tobacco and tobacco products. Our clients include major international tobacco manufacturers, various Governments and Government agencies such as the Canadian Federal Department of Health and the Massachusetts Department of Public Health, agricultural interests, university researchers and private research interests. Normally our contractual obligations extend **only** to the provision of data and related reports.

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<sup>3</sup> *Unless superseded by a specific contractual obligation or other written agreement.*

## 2 Administrative Information<sup>4</sup>

### 2.1 Quotation Reference

Quotation Number: T2881R1

Date of Quotation: December 29, 2009

Recipient's Name: Dr. Betsy Bombick

### 2.2 Client Identification

R.J. Reynolds Tobacco Corporation  
950 Reynolds Boulevard  
Winston-Salem NC 27102-1487  
U.S.A

### 2.3 Date of Sample Receipt

The samples to be tested for M125 were received on December 16, 2009 via UPS.

### 2.4 Sample Characteristics

The shipment received on December 16, 2009 consisted of 6 tins for each of 2 products, 25 tins of one product, 8 boxes for each of 2 products, 12 boxes of one product, 16 boxes of one product and one carton of one product. There was no physical damage to cartons, packages, tins or boxes.

### 2.5 Test Article Identification

The following sample codes have been used to identify the products associated with the results in each of the tables that are part of this report.

Sample ID	Sample Description
1002241	Ariva Wintergreen
1002242	Copenhagen Long Cut
1002243	Fresh Strips
1002244	2S3 Research Moist Smokeless Tobacco
1002245	Camel SNUS Frost
1002246	Mellow Sticks
1002247	Fresh Orbs
1002248	2R4F Kentucky Reference Cigarettes

### 2.6 Special Instructions

No special instructions, with respect to the selection of the test sample and/or compositing, were received.

### 2.7 Date of Test Report

Original: April 21, 2010

Revision 1: December 22, 2010

<sup>4</sup> Provided in accord with International Standard ISO/IEC 17025 "General requirements for the competence of testing and calibration laboratories" Section 5.10

## 2.8 Revision History

### 2.8.1 Revision 1

This revision was required due to both a client request for additional analysis on a 'unit of use' basis for the smokeless tobacco products tested (client CRO # 2010-014-Smokeless-R1) as well as a client inquiry (client CRO # 2010-015-M125-SCE smokeless) requiring clarification to some of the report text and data files.

## 3 Accreditation

### 3.1 Scope (refer to [appendix A](#))

Labstat International ULC has been accredited by the Standards Council of Canada to International Standard ISO/IEC 17025 "General requirements for the competence of testing and calibration laboratories" with a scope that includes all of the mandated tobacco-related Health Canada methods (see Tobacco Reporting Regulations dated 26 June 2000, Canada Gazette Part II, Vol. 134, No. 15 Schedules 1, 2 and 3 pages 1780 – 1785). The testing included in this report is within the scope of this accreditation, unless otherwise noted in Section 4.



Accredited LAB 368  
(SCC Accreditation & Design Mark is an Official Mark of the Standards Council of Canada, used under license)

### 3.2 International Recognition of Tests

Our accrediting organization, Standards Council of Canada, is one of a number of such member bodies participating in a global mutual recognition agreement (MRA), known as the ILAC (International Laboratory Accreditation Cooperation) Arrangement. The arrangement, effective January 31, 2001, requires acceptance of technical test data from accredited laboratories by member bodies in numerous international economies.

## 4 Methods

### 4.1 General References

Test methods for the sister chromatid exchange assay of mainstream tobacco smoke/smokeless tobacco extracts, the analysis of mainstream tobacco smoke, the analysis of constituent tobacco and the analysis of smokeless tobacco extracts are referenced in the tables below and were practiced as written unless otherwise indicated.

#### METHOD FOR ASSAYS OF MAINSTREAM TOBACCO SMOKE/SMOKELESS TOBACCO EXTRACTS

Item	Assay	Labstat Method
1.	Sister Chromatid Exchange Assay (SCE)	Labstat Method TBA-504, <i>In Vitro</i> Sister Chromatid Exchange (SCE) Assay for Mainstream Tobacco Smoke

## OFFICIAL METHOD FOR THE COLLECTION OF EMISSION DATA ON MAINSTREAM SMOKE

Emission	Official Method
(a) Glycerol	Appendix 3 of Health Canada Official Method T-501, <i>Bacterial Reverse Mutation Assay for Mainstream Tobacco Smoke</i>
(b) Menthol	
(c) Nicotine	
(d) Propylene Glycol	
(e) Water	
(f) Tar	

## OFFICIAL METHODS FOR THE COLLECTION OF DATA ON CONSTITUENTS<sup>5</sup>

Item	Constituent	Official Method
1.	(a) Nicotine (b) Nor nicotine (c) Anabasine (d) Myosmine (e) Anatabine	Official Method T-301, <i>Determination of Alkaloids in Whole Tobacco</i>
2.	Moisture	AOAC Official Method 966.02, <i>Moisture in Tobacco, Gravimetric Method</i>

## OFFICIAL METHODS FOR THE COLLECTION OF DATA ON SMOKELESS TOBACCO EXTRACTS

Item	Constituent	Official Method
1.	Nicotine	Appendix 3 of Health Canada Official Method T-501, <i>Bacterial Reverse Mutation Assay for Mainstream Tobacco Smoke</i>
2.	pH	Official Method T-310, <i>Determination of Whole Tobacco pH</i>

### 4.1.1 Sister Chromatid Exchange Assay

#### 4.1.1.1 References

OECD Guidelines for the Testing of Chemicals: *Genetic Toxicology: In vitro Sister Chromatid Exchange Assay in Mammalian Cells*, Guideline 479 (Adopted 23<sup>rd</sup> October 1986).

Bombick, B.W., Bombick, B.R., Ayres, P.H., Putnam, K., Avalos, J., Borgerding, M.F., and Doolittle, D.J. (1997) Evaluation of the genotoxic and cytotoxic potential of mainstream whole smoke and smoke condensate from a cigarette containing a novel carbon filter. *Fundamental and Applied Toxicology* 39: 11-17.

Bombick, B.R., Murli, H., Avalos, J.T., Bombick, D.W., Morgan, W.T., Putnam, K.T., and Doolittle, D.J. (1997) Chemical and biological studies of a new cigarette that primarily heats tobacco. Part 2. In vitro toxicology of mainstream smoke condensate. *Food and Chemical Toxicology* 36: 183-190.

Doolittle, D.J., Lee, C.K., Mirsalis, J.C., Riccio, E., Rudd, C.J., Burger, G.T., and Hayes, A.W. (1990a) Comparative studies on the genotoxic activity of mainstream smoke condensate from cigarettes which burn or only heat tobacco. *Environ. Molec. Mutagen.*, 15: 93-105.

<sup>5</sup> Canadian Tobacco Reporting Regulations: 2000-01-19 *Canada Gazette Part II, Vol. 134, No. 15* Part 3: Emissions from Designated Tobacco Products. Test method numbers refer to Health Canada methodologies which have been posted by Health Canada on the internet at site <http://www.hc-sc.gc.ca/hc-ps/tobac-tabac/legislation/reg/indust/index-eng.php>

Doolittle, D.J., Lee, C.K., Ivett, J.L., Mirsalis, J.C., Riccio, E., Rudd, C.J., Burger, G.T., and Hayes, A.W. (1990b) Genetic toxicology studies comparing the activity of sidestream smoke from cigarettes which burn or only heat tobacco. *Mutation Research* 240: 59-72.

Galloway, S.M., Bloom, A.D., Resnick, M., Margolin, B.H., Nakamura, F., Archer, P., and Zeiger, E. (1985) Development of a standard protocol for in vitro cytogenetic testing with Chinese hamster ovary cells: comparison of results for 22 compounds in two laboratories. *Environmental Mutagenesis* 7: 1-51.

ISO 3402 (1999), *Tobacco and tobacco products – Atmosphere for conditioning and testing*.

ISO 3308:(2000). *Routine analytical cigarette-smoking machine – Definitions and standard conditions*.

ISO 4387:(2000). *Cigarettes – Determination of total and nicotine-free dry particulate matter using a routine analytical smoking machine*.

Perry, P., and Wolff, S. (1974) New Giemsa method for the differential staining of sister chromatids. *Nature* 251: 156-158.

Goto, K., Maeda, S., Kano, Y., and Sugiyama, T. (1978) Factors involved in differential Giemsa-staining of sister chromatids. *Chromosoma* 66: 351-359.

T-115 Health Canada Test Method: *Determination of “Tar”, Nicotine and Carbon Monoxide in Mainstream Tobacco Smoke*.

#### 4.1.1.2 Method Synopsis

(b) (4)



#### 4.1.2 Nicotine in Smokeless Tobacco Extracts (T-501, Appendix A)

##### 4.1.2.1 Method Deviations

(b) (4)

#### 4.1.3 pH of Smokeless Tobacco Extracts (T-310)

##### 4.1.3.1 Method Deviations

(b) (4)

#### 4.2 Preparation of Solutions and Media

(b) (4)

#### 4.3 Preparation of CHO-WBL Cell Culture Suspension

(b) (4)

#### 4.4 Collection of Total Particulate Matter (TPM)<sup>6</sup>

(b) (4)

<sup>6</sup> See International Standard ISO 4387 Cigarettes – Determination of total and nicotine-free dry particulate matter using a routine analytical smoking machine (Reference number ISO4387:2000)

<sup>7</sup> Health Canada 100% Vent Blocking Method

6(b)(iii) all ventilation holes must be blocked by placing over them a strip of Mylar adhesive tape, Scotch Brand product no. 600 Transparent Tape, and the tape must be cut so that it covers the circumference and is tightly secured from the end of the filter to the tipping overwrap seam, or by another method of equivalent efficiency.

(b) (4)



#### **4.4.1 Processing of TPM**

(b) (4)



#### **4.4.2 Test Method Deviations**

(b) (4)



#### **4.5 Smokeless Tobacco Sample Preparation**

(b) (4)



#### **4.6 Genotoxicity Testing**

(b) (4)



<sup>8</sup> DMSO is the most useful solvent for cell toxicity assays because it dissolves a wide range of chemicals, is relatively non-toxic to the cells and to the microsomal S9 enzymes.

(b) (4)

#### 4.6.2 Harvesting of Cells

(b) (4)

#### 4.6.3 Sister Chromatid Exchange Staining and Scoring

(b) (4)

(b) (4)

## 5 Results

All chemistry analysis and assay results have been reported in spreadsheet format (MS Excel data files). These data files have been described in section 5.1 and may be found on the compact disk that accompanies this report.

### 5.1 Data Files

The file names of the accompanying MS Excel data files, and their contents, are as follows:

#### Chemistry Data Files

##### M125\_wt\_dataCF.xls

This file contains all of the constituent analysis data for each smokeless tobacco sample (i.e. pre-extraction) submitted for testing in accordance with section 4 of this report.

##### M125\_ms\_dataCF.xls

This file contains all of the emission analysis data for the smoked tobacco sample 2R4F Kentucky Reference (1002248) submitted for testing in accordance with section 4 of this report.

##### M125\_extract\_dataCF.xls

This file contains all of the constituent analysis data for each smokeless tobacco extract that was prepared for testing in accordance with section 4 of this report.

##### M125\_nicotine extraction efficiency.xls

This file contains all of the nicotine extraction efficiencies for each smokeless tobacco extract sample that was prepared for testing in accordance with section 4 of this report.

#### Sister Chromatid Exchange Assay Data Files

##### M125\_sce\_wt\_dataCF.xls

This file contains all of the assay data for each smokeless tobacco sample submitted for testing in accordance with section 4 of this report.

**M125\_sce\_tpm\_dataCF.xls**

This file contains all of the assay data for the smoked tobacco sample submitted for testing in accordance with section 4 of this report.

**M125\_sce\_Labstat Internal Controls.xls**

This file contains all of the data for the assays of Labstat's internal Kentucky Reference 3R4F control samples as well as the laboratory control assay validations as outlined in sections 5.2.3 and 5.2.4 of this report.

**5.2 Quality Control****5.2.1 Chemicals and Media****5.2.1.1 Requirement**

As per TBA-504, the sterility of all media, reagents and solutions must be verified and recorded. (b

)

(4

**5.2.1.2 Conclusion**

No bacterial growth was detected on any of the nutrient agar plates used to check the sterility of the media, reagents and solutions. No turbidity was noted in any of the media preparations used throughout this project.

**5.2.2 Cell Culture Maintenance****5.2.2.1 Requirement**

(b) (4)

**5.2.2.2 Conclusion**

No changes in cell morphology or adhesive properties were noted. Mycoplasma contamination was absent in all cases.

**5.2.3 Evaluation of Negative Controls**

9

(b) (4)

<sup>9</sup> Acceptance criteria have not been defined in TBA-504

## 5.2.3.2 Conclusion

Treatment Schedule	Assay Date	Flask 1		Flask 2	
		# SCE/cell	QC Result	# SCE/cell	QC Result
Schedule (i)	04-Feb-10	6.48	< 10	6.12	< 10
Schedule (i)	04-Feb-10	6.20	< 10	5.48	< 10
Schedule (i)	11-Feb-10	5.68	< 10	5.88	< 10
Schedule (i)	11-Feb-10	6.12	< 10	6.52	< 10
Schedule (i)	23-Feb-10	6.52	< 10	6.80	< 10
Schedule (i)	23-Feb-10	6.76	< 10	6.44	< 10
Schedule (i)	02-Mar-10	6.48	< 10	6.24	< 10
Schedule (i)	02-Mar-10	6.08	< 10	6.16	< 10
Schedule (i)	09-Mar-10	6.28	< 10	6.52	< 10
Schedule (i)	09-Mar-10	5.80	< 10	6.52	< 10
Schedule (i)	09-Mar-10	6.56	< 10	6.32	< 10
Schedule (i)	16-Mar-10	6.40	< 10	6.64	< 10
Schedule (i)	16-Mar-10	6.24	< 10	6.72	< 10
Schedule (i)	16-Mar-10	6.92	< 10	6.36	< 10
Schedule (i)	23-Mar-10	6.28	< 10	6.12	< 10
Schedule (i)	23-Mar-10	6.16	< 10	6.44	< 10
Schedule (i)	25-Mar-10	5.96	< 10	6.04	< 10
Schedule (i)	30-Mar-10	6.80	< 10	7.00	< 10
Schedule (ii)	09-Feb-10	6.24	< 10	6.52	< 10
Schedule (ii)	09-Feb-10	6.12	< 10	6.40	< 10
Schedule (ii)	17-Feb-10	7.32	< 10	7.20	< 10
Schedule (ii)	17-Feb-10	6.60	< 10	6.92	< 10
Schedule (ii)	25-Feb-10	6.52	< 10	7.04	< 10
Schedule (ii)	25-Feb-10	6.60	< 10	6.56	< 10
Schedule (ii)	04-Mar-10	6.12	< 10	7.12	< 10
Schedule (ii)	04-Mar-10	6.16	< 10	5.96	< 10
Schedule (ii)	11-Mar-10	6.68	< 10	6.96	< 10
Schedule (ii)	11-Mar-10	7.08	< 10	6.60	< 10
Schedule (ii)	11-Mar-10	6.36	< 10	6.36	< 10
Schedule (ii)	18-Mar-10	6.88	< 10	7.12	< 10
Schedule (ii)	18-Mar-10	7.68	< 10	7.08	< 10
Schedule (ii)	18-Mar-10	6.96	< 10	6.92	< 10
Schedule (ii)	24-Mar-10	7.20	< 10	7.36	< 10
Schedule (ii)	24-Mar-10	6.12	< 10	6.68	< 10
Schedule (ii)	25-Mar-10	6.32	< 10	6.68	< 10
Schedule (ii)	30-Mar-10	6.72	< 10	6.08	< 10

All negative control assay results that are part of this report were found to be acceptable in regards to the above requirement. See the "[± Control Summary](#)" sheet in the *M125\_sce\_Labstat Internal Controls.xls* data file for evaluation results.

## 5.2.4 Evaluation of Positive Controls

### 5.2.4.1 Acceptance Criteria for Positive Controls<sup>10</sup>

(b) (4)

#### 5.2.4.2 Conclusion

Treatment Schedule	Assay Date	Positive Control	[Conc] [µg/mL]	Flask 1 Observed		Flask 2 Observed	
				# SCE/cell	QC Result	# SCE/cell	QC Result
Schedule (i)	04-Feb-10	Mitomycin C	0.005	24.3	≥ 2-fold increase	23.4	≥ 2-fold increase
Schedule (i)	04-Feb-10	Mitomycin C	0.005	23.7	≥ 2-fold increase	23.2	≥ 2-fold increase
Schedule (i)	11-Feb-10	Mitomycin C	0.005	25.1	≥ 2-fold increase	25.2	≥ 2-fold increase
Schedule (i)	11-Feb-10	Mitomycin C	0.005	25.9	≥ 2-fold increase	26.3	≥ 2-fold increase
Schedule (i)	23-Feb-10	Mitomycin C	0.005	25.7	≥ 2-fold increase	25.4	≥ 2-fold increase
Schedule (i)	23-Feb-10	Mitomycin C	0.005	25.2	≥ 2-fold increase	26.1	≥ 2-fold increase
Schedule (i)	02-Mar-10	Mitomycin C	0.005	25.0	≥ 2-fold increase	25.4	≥ 2-fold increase
Schedule (i)	02-Mar-10	Mitomycin C	0.005	24.1	≥ 2-fold increase	24.0	≥ 2-fold increase
Schedule (i)	09-Mar-10	Mitomycin C	0.005	24.9	≥ 2-fold increase	25.0	≥ 2-fold increase
Schedule (i)	09-Mar-10	Mitomycin C	0.005	24.6	≥ 2-fold increase	24.4	≥ 2-fold increase
Schedule (i)	09-Mar-10	Mitomycin C	0.005	25.9	≥ 2-fold increase	25.4	≥ 2-fold increase
Schedule (i)	16-Mar-10	Mitomycin C	0.005	24.4	≥ 2-fold increase	24.6	≥ 2-fold increase
Schedule (i)	16-Mar-10	Mitomycin C	0.005	24.6	≥ 2-fold increase	25.0	≥ 2-fold increase
Schedule (i)	16-Mar-10	Mitomycin C	0.005	24.6	≥ 2-fold increase	24.4	≥ 2-fold increase
Schedule (i)	23-Mar-10	Mitomycin C	0.005	25.0	≥ 2-fold increase	24.8	≥ 2-fold increase
Schedule (i)	23-Mar-10	Mitomycin C	0.005	25.0	≥ 2-fold increase	25.3	≥ 2-fold increase
Schedule (i)	25-Mar-10	Mitomycin C	0.005	25.1	≥ 2-fold increase	24.3	≥ 2-fold increase
Schedule (i)	30-Mar-10	Mitomycin C	0.005	25.0	≥ 2-fold increase	24.0	≥ 2-fold increase
Schedule (ii)	09-Feb-10	Cyclophosphamide	1.5	21.7	≥ 2-fold increase	21.5	≥ 2-fold increase
Schedule (ii)	09-Feb-10	Cyclophosphamide	1.5	22.2	≥ 2-fold increase	21.0	≥ 2-fold increase
Schedule (ii)	17-Feb-10	Cyclophosphamide	1.5	22.3	≥ 2-fold increase	21.5	≥ 2-fold increase
Schedule (ii)	17-Feb-10	Cyclophosphamide	1.5	21.9	≥ 2-fold increase	21.2	≥ 2-fold increase
Schedule (ii)	25-Feb-10	Cyclophosphamide	1.5	22.0	≥ 2-fold increase	21.0	≥ 2-fold increase
Schedule (ii)	25-Feb-10	Cyclophosphamide	1.5	21.8	≥ 2-fold increase	22.0	≥ 2-fold increase
Schedule (ii)	04-Mar-10	Cyclophosphamide	1.5	20.1	≥ 2-fold increase	21.1	≥ 2-fold increase
Schedule (ii)	04-Mar-10	Cyclophosphamide	1.5	21.6	≥ 2-fold increase	21.9	≥ 2-fold increase
Schedule (ii)	11-Mar-10	Cyclophosphamide	1.5	21.4	≥ 2-fold increase	21.5	≥ 2-fold increase
Schedule (ii)	11-Mar-10	Cyclophosphamide	1.5	21.1	≥ 2-fold increase	22.0	≥ 2-fold increase
Schedule (ii)	11-Mar-10	Cyclophosphamide	1.5	21.2	≥ 2-fold increase	22.4	≥ 2-fold increase
Schedule (ii)	18-Mar-10	Cyclophosphamide	1.5	22.7	≥ 2-fold increase	23.0	≥ 2-fold increase
Schedule (ii)	18-Mar-10	Cyclophosphamide	1.5	20.8	≥ 2-fold increase	22.1	≥ 2-fold increase
Schedule (ii)	18-Mar-10	Cyclophosphamide	1.5	21.0	≥ 2-fold increase	21.4	≥ 2-fold increase
Schedule (ii)	24-Mar-10	Cyclophosphamide	1.5	20.5	≥ 2-fold increase	20.0	≥ 2-fold increase
Schedule (ii)	24-Mar-10	Cyclophosphamide	1.5	22.0	≥ 2-fold increase	20.8	≥ 2-fold increase
Schedule (ii)	25-Mar-10	Cyclophosphamide	1.5	21.2	≥ 2-fold increase	21.4	≥ 2-fold increase
Schedule (ii)	30-Mar-10	Cyclophosphamide	1.5	21.3	≥ 2-fold increase	21.9	≥ 2-fold increase

All positive control assay results that are part of this report were found to be acceptable in regards to the above requirements for positive control results. See the “± Control Summary” sheet in the *M125\_sce\_Labstat Internal Controls.xls* data file for evaluation results.

<sup>10</sup> Acceptance criteria have not been defined in TBA-504

## 5.2.5 Evaluation of Laboratory Controls (Kentucky Reference 3R4F)

### 5.2.5.1 Acceptance Criteria for Chemistry

(b) (4)

### 5.2.5.2 Conclusion

Analyte	Unit	Historical Yields		Observed Yields		Z Score	P Value
		Average	Std Dev	Average	Std Dev		
Nicotine	[mg/cig]	0.672	0.034	0.667	0.055	0.169	0.866
Tar	[mg/cig]	8.23	0.37	8.05	0.31	0.489	0.625

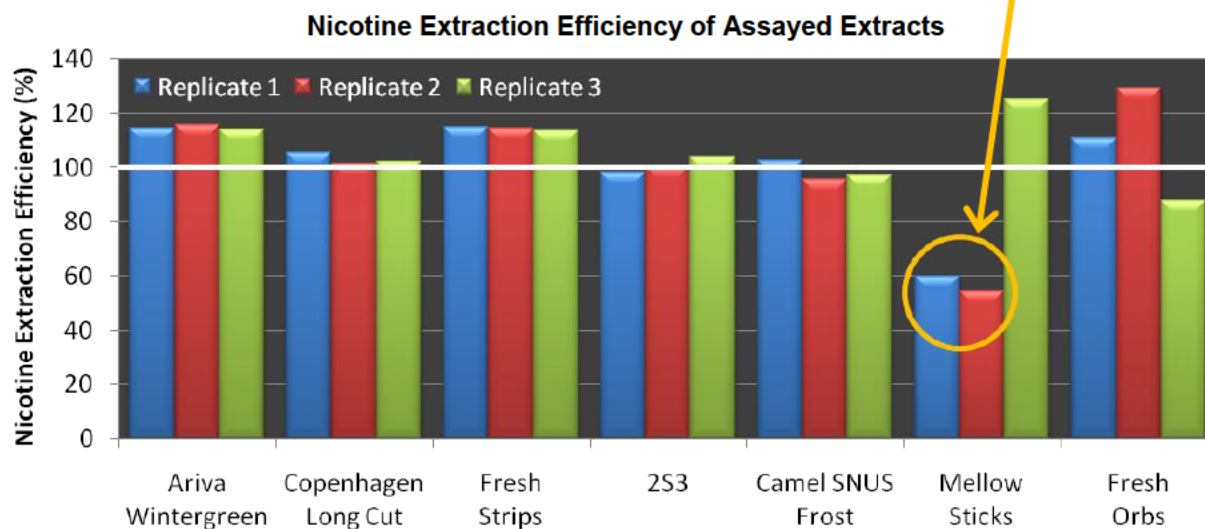
The control results for the chemistry analytes of interest were found to be acceptable as defined by the above criteria. Consequently, it is reasonable to assume that the values determined for the test samples are reflective of the characteristics of the products as received and tested as described in section 4 of this report.

<sup>11</sup> A minimum of 30 results is normally required for the purpose of this comparison.

### 5.3 Nicotine Extraction Efficiency

For the 7 smokeless tobacco test samples, both constituent (i.e. pre-extraction) nicotine and nicotine content of the extracted tobacco sample in DMSO were determined. This allowed for the determination of nicotine extraction efficiency (%) – or the percentage of pre-extraction constituent nicotine that was found in each tobacco extract subjected to the SCE assay  $\left( \frac{\text{Calculated Nicotine in Tobacco Extract (mg/g)}}{\text{Pre-Extraction Constituent Nicotine (mg/g)}} \times 100 \right)$ .

Set-Run Number	Sample Description	Replicate Number	Pre-Extraction Constituent Nicotine (mg/g 'as received')	Calculated Nicotine In Tobacco Extract (mg/g 'as received')	Extraction Efficiency (%)
1-4	Ariva Wintergreen	1	5.39	6.16	114
2-1		2		6.24	116
3-2		3		6.14	114
1-3	Copenhagen Long Cut	1	12.7	13.4	105
2-2		2		12.8	101
3-1		3		12.9	102
1-2	Fresh Strips	1	2.23	2.56	115
2-3		2		2.55	114
3-3		3		2.53	114
4-1	2S3	1	13.0	12.7	98.0
5-2		2		13.1	100
6-3		3		13.5	104
4-3	Camel SNUS Frost	1	10.7	11.0	103
5-3		2		10.2	95.5
6-2		3		10.4	97.0
4-2	Mellow Sticks	1	4.39	2.63	59.8
5-1		2		2.40	54.6
6-1		3		5.49	125
7-1	Fresh Orbs	1	2.29	2.54	111
8-1		2		2.96	129
9-1		3		2.01	87.7



Generally, one would expect close to 100% nicotine extraction efficiency for all test samples to confirm that all of the available nicotine was actually extracted in the DMSO solution. However, for the 'Mellow Sticks' (1002246) brand, 2 of the 3 replicates have low extraction efficiencies of around 60%.

All of the above calculations and the plot can be found on the CD that accompanies this report in the file *M125\_nicotine extraction efficiency.xls*.

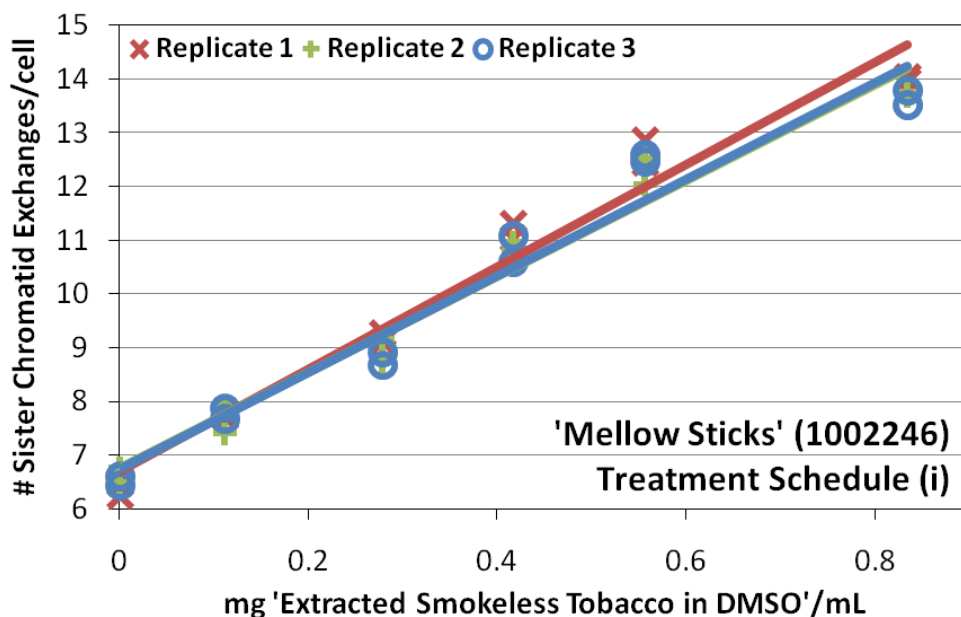
This large variation in nicotine extraction efficiencies was further confirmed when the extraction steps (see section 4.5 of this report) were repeated in triplicate on the 'Mellow Sticks' brand using fresh product. The nicotine analysis results of the repeated extractions are shown in the table below and indicate low extraction efficiencies of 50 – 70% for the repeat extracts.

Set-Run Number	Sample Description	Replicate Number	Pre-Extraction Constituent Nicotine (mg/g 'as received')	Calculated Nicotine In Tobacco Extract (mg/g 'as received')	Extraction Efficiency (%)
10-1	Mellow Sticks	1	4.39	2.63	59.8
11-1		2		2.20	50.1
12-1		3		3.07	69.9

When the smokeless tobacco extract dose is expressed per unit 'nicotine in smokeless tobacco extract', there is the implicit assumption that the compound(s) that are responsible for the activity in the SCE assay are extracted to the same extent as nicotine. If this assumption is not true, it is possible to have 100% extraction efficiency for the unknown compounds responsible for assay activity but variable extraction efficiency for nicotine.

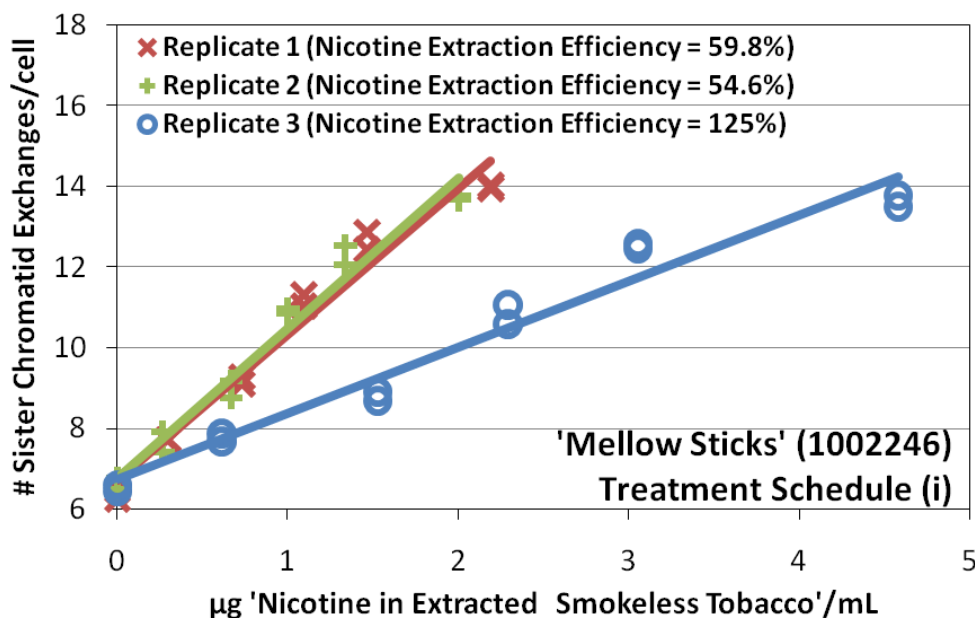
This is likely why the specific dose-response results for the 3 replicate assays of 'Mellow Sticks' are similar on a 'extracted smokeless tobacco' and 'extracted moisture-corrected smokeless tobacco' dose basis but are found to be very different on a 'nicotine in extracted smokeless tobacco' dose basis.

#### Schedule (i) # SCE/Cell as a Function of 'Extracted Smokeless Tobacco' Dose



On a 'extracted smokeless tobacco' dose basis, the specific activity slope for  $[(\# \text{ SCE's/cell})/(\text{mg/mL})]$  appears to be very similar for all 3 replicate assays. This would indicate that the compounds responsible for activity in the assay were extracted to similar extents in each replicate sample.

### Schedule (i) # SCE/Cell as a Function of 'Nicotine in Extracted Smokeless Tobacco' Dose



On an 'extracted nicotine in smokeless tobacco' dose basis, the specific activity slope for [(# SCE's/cell)/(µg/mL)] appears to show replicate 3 (125% extraction efficiency) being lower than replicates 1 and 2 (59.8% and 54.6% extraction efficiency, respectively).

This would indicate that nicotine is not extracted to the same extent as the compounds responsible for activity in the SCE assay, thus leading to the impression of a difference in specific activity among replicate extracts on a nicotine dose basis when this is likely not the case.

## 6 Genotoxicity Comparisons

### 6.1 Data Files

Data files containing calculated specific activities (see the defined method in section 6.3 of this report) may be found on the compact disk (CD) that accompanies this report. The data files have been labeled *M125\_sce\_tpm\_stats.xls* (dose-response curve analysis results for TPM of tobacco brand 1002248), *M125\_sce\_wt\_stats\_ST.xls* (dose-response curve analysis results for smokeless tobacco products on a mg 'extracted smokeless tobacco in DMSO'/mL dose basis), *M125\_sce\_wt\_stats\_ST-H2O.xls* (dose-response curve analysis results for smokeless tobacco products on a mg 'extracted moisture-corrected smokeless tobacco in DMSO'/mL dose basis), *M125\_sce\_wt\_stats\_Nicotine.xls* (dose-response curve analysis results for smokeless tobacco products on a µg 'nicotine in extracted smokeless tobacco'/mL dose basis), *M125\_sce\_wt\_stats\_Unit.xls* (dose-response curve analysis results for smokeless tobacco products on a 'unit of use'/mL dose basis), *M125\_sce\_tpm+wt\_stats\_Nicotine.xls* (dose-response curve analysis results for smoked and smokeless tobacco products on a 'nicotine' dose basis) and *M125\_sce\_tpm+wt\_stats\_Unit.xls* (dose-response curve analysis results for smoked and smokeless tobacco products on a 'unit of use' dose basis).

## 6.2 Methodology

Instructions regarding the analysis of the sister chromatid exchange assay data were received from the client and included the following requirements:

(b) (4)

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### 6.2.1 Defined Unit Weights for 'Unit of Use' Doses

The as-received weights 'per unit' for each of the smokeless tobacco products were supplied by the client and are listed in the table below. These weights were used to determine the 'units of use' for the tobacco extract used in the assays. The calculations of the 'unit of use'/mL doses can be found on the 'Sample Generation Data' sheet of the *M125\_sce\_wt\_dataCF.xls* data file.

Sample ID	Sample Description	Unit of Use	Weight 'as rec'd' (grams)
1002241	Ariva Wintergreen	1	0.28
1002242	Copenhagen Long Cut	2.5 grams	2.5
1002243	Fresh Strips	1	0.125
1002244	2S3 Research Moist Smokeless Tobacco	2.5 grams	2.5
1002245	Camel SNUS Frost	1 pouch	0.6
1002246	Mellow Sticks	1 stick	0.516
1002247	Fresh Orbs	1	0.225

For the KR 2R4F (1002248) brand, the 'unit of use' was defined by the client as one cigarette. The calculations of the 'cigarette'/mL doses can be found on the 'Smoking Data' sheet of the *M125\_sce\_tpm\_dataCF.xls* data file.

### 6.3 Specific Activity Determinations

Specific activity was determined by fitting the linear model  $y = \beta_0 + \beta_1 x$  to the smoked or smokeless tobacco sample dose  $X$  (e.g. mg 'extracted smokeless tobacco in DMSO'/mL media) and assay response  $Y$  (number of sister chromatid exchanges per cell) for each replicate assay by ordinary least squares.

As per instruction 4a in section 6.2, the zero (0) dose results were excluded from model fitting under treatment schedule (ii).

## 6.4 Comparisons among Smokeless Tobacco Products

### 6.4.1 Individual Replicate Slopes and Log-Transformed Slope Statistics

The following results were obtained for the replicate slope estimates and the summary statistics over replicate log-transformed slope estimates for each smokeless tobacco test sample under both schedules.

#### 6.4.1.1 Number of Sister Chromatid Exchanges per cell (# SCE/cell)/[mg 'Extracted Smokeless Tobacco in DMSO'/mL]

		Replicate Slopes [(#SCE/cell)/(mg 'ST'/mL)]								
Treatment	Sample	Replicate 1		Replicate 2		Replicate 3		Log[Slope] Statistics		
Schedule	Description	'ST' Dose (mg/mL)	slope	'ST' Dose (mg/mL)	slope	'ST' Dose (mg/mL)	slope	Mean	Std. Err.	95% C.I.
Schedule (i)	Ariva Wintergreen	0 - 0.833	8.08	0 - 0.834	8.21	0 - 0.834	8.75	0.921	0.011	0.876 - 0.967
Schedule (i)	Copenhagen Long Cut	0 - 0.833	8.60	0 - 0.834	7.85	0 - 0.834	8.51	0.920	0.012	0.866 - 0.973
Schedule (i)	Fresh Strips	0 - 0.833	7.47	0 - 0.833	8.28	0 - 0.834	7.62	0.891	0.014	0.832 - 0.95
Schedule (i)	2S3	0 - 0.834	10.3	0 - 0.834	9.81	0 - 0.834	10.1	1.004	0.006	0.976 - 1.032
Schedule (i)	Camel SNUS Frost	0 - 0.834	6.31	0 - 0.833	6.47	0 - 0.834	7.03	0.819	0.014	0.759 - 0.88
Schedule (i)	Mellow Sticks	0 - 0.834	9.52	0 - 0.834	8.93	0 - 0.834	9.01	0.961	0.009	0.924 - 0.999
Schedule (i)	Fresh Orbs	0 - 0.834	8.17	0 - 0.834	8.82	0 - 0.834	9.06	0.938	0.013	0.88 - 0.996
Schedule (ii)	Ariva Wintergreen	1.11 - 3.33	1.64	1.11 - 3.34	1.81	1.11 - 3.34	1.81	0.244	0.014	0.183 - 0.305
Schedule (ii)	Copenhagen Long Cut	1.11 - 3.33	1.74	1.11 - 3.33	1.56	1.11 - 3.33	1.53	0.205	0.018	0.128 - 0.283
Schedule (ii)	Fresh Strips	1.11 - 3.33	1.44	1.11 - 3.33	1.57	1.11 - 3.33	1.62	0.187	0.015	0.121 - 0.254
Schedule (ii)	2S3	1.11 - 3.34	1.75	1.11 - 3.33	1.98	1.11 - 3.34	2.14	0.290	0.026	0.179 - 0.401
Schedule (ii)	Camel SNUS Frost	1.11 - 3.34	1.52	1.11 - 3.33	1.70	1.11 - 3.34	1.65	0.210	0.015	0.145 - 0.274
Schedule (ii)	Mellow Sticks	1.11 - 3.33	1.66	1.11 - 3.34	1.95	1.11 - 3.34	1.52	0.230	0.032	0.093 - 0.368
Schedule (ii)	Fresh Orbs	1.11 - 3.33	2.01	1.11 - 3.33	1.73	1.11 - 3.33	1.82	0.267	0.019	0.185 - 0.349

#### 6.4.1.2 Number of Sister Chromatid Exchanges per cell (# SCE/cell)/[mg 'Extracted Moisture-Corrected Smokeless Tobacco in DMSO'/mL]

		Replicate Slopes [(#SCE/cell)/(mg 'ST-H <sub>2</sub> O'/mL)]								
Treatment	Sample	Replicate 1		Replicate 2		Replicate 3		Log[Slope] Statistics		
Schedule	Description	'ST-H <sub>2</sub> O' Dose (mg/mL)	slope	'ST-H <sub>2</sub> O' Dose (mg/mL)	slope	'ST-H <sub>2</sub> O' Dose (mg/mL)	slope	Mean	Std. Err.	95% C.I.
Schedule (i)	Ariva Wintergreen	0 - 0.804	8.37	0 - 0.804	8.52	0 - 0.805	9.07	0.937	0.011	0.892 - 0.982
Schedule (i)	Copenhagen Long Cut	0 - 0.422	17.0	0 - 0.422	15.5	0 - 0.422	16.8	1.22	0.01	1.16 - 1.27
Schedule (i)	Fresh Strips	0 - 0.754	8.25	0 - 0.754	9.15	0 - 0.754	8.42	0.934	0.014	0.875 - 0.993
Schedule (i)	2S3	0 - 0.385	22.3	0 - 0.385	21.2	0 - 0.385	22.0	1.34	0.01	1.31 - 1.37
Schedule (i)	Camel SNUS Frost	0 - 0.586	8.98	0 - 0.586	9.20	0 - 0.586	10.0	0.972	0.014	0.912 - 1.033
Schedule (i)	Mellow Sticks	0 - 0.769	10.3	0 - 0.77	9.67	0 - 0.77	9.76	0.996	0.009	0.958 - 1.034
Schedule (i)	Fresh Orbs	0 - 0.795	8.57	0 - 0.795	9.25	0 - 0.795	9.50	0.959	0.013	0.901 - 1.017
Schedule (ii)	Ariva Wintergreen	1.07 - 3.22	1.70	1.07 - 3.22	1.88	1.07 - 3.22	1.88	0.259	0.014	0.198 - 0.321
Schedule (ii)	Copenhagen Long Cut	0.563 - 1.69	3.44	0.563 - 1.69	3.07	0.563 - 1.69	3.01	0.501	0.018	0.424 - 0.579
Schedule (ii)	Fresh Strips	1.01 - 3.02	1.59	1.01 - 3.02	1.74	1.01 - 3.02	1.79	0.231	0.015	0.165 - 0.297
Schedule (ii)	2S3	0.514 - 1.54	3.78	0.514 - 1.54	4.29	0.514 - 1.54	4.64	0.625	0.026	0.515 - 0.736
Schedule (ii)	Camel SNUS Frost	0.782 - 2.35	2.15	0.782 - 2.34	2.42	0.782 - 2.35	2.35	0.362	0.015	0.298 - 0.427
Schedule (ii)	Mellow Sticks	1.03 - 3.08	1.80	1.03 - 3.08	2.11	1.03 - 3.08	1.64	0.265	0.032	0.128 - 0.403
Schedule (ii)	Fresh Orbs	1.06 - 3.18	2.11	1.06 - 3.18	1.82	1.06 - 3.18	1.91	0.288	0.019	0.206 - 0.37

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### 6.4.1.3 Number of Sister Chromatid Exchanges per cell (# SCE/cell)/[µg 'Nicotine in Extracted Smokeless Tobacco'/mL]

		Replicate Slope Analysis [(#SCE/cell)/(µg 'NIC'/mL)]								
Treatment Schedule	Sample Description	Replicate 1		Replicate 2		Replicate 3		Log[Slope] Statistics		
		'NIC' Dose (µg/mL)	slope	'NIC' Dose (µg/mL)	slope	'NIC' Dose (µg/mL)	slope	Mean	Std. Err.	95% C.I.
Schedule (i)	Ariva Wintergreen	0 - 5.14	1.31	0 - 5.21	1.32	0 - 5.12	1.42	0.130	0.012	0.079 to 0.181
Schedule (i)	Copenhagen Long Cut	0 - 11.1	0.643	0 - 10.7	0.611	0 - 10.8	0.658	-0.196	0.010	-0.237 to -0.154
Schedule (i)	Fresh Strips	0 - 2.14	2.91	0 - 2.13	3.25	0 - 2.11	3.01	0.485	0.014	0.424 to 0.545
Schedule (i)	2S3	0 - 10.6	0.810	0 - 10.9	0.751	0 - 11.3	0.751	-0.113	0.011	-0.16 to -0.066
Schedule (i)	Camel SNUS Frost	0 - 9.19	0.573	0 - 8.54	0.632	0 - 8.68	0.675	-0.204	0.021	-0.293 to -0.115
Schedule (i)	Mellow Sticks	0 - 2.19	3.62	0 - 2	3.72	0 - 4.58	1.64	0.448	0.117	-0.053 to 0.95
Schedule (i)	Fresh Orbs	0 - 2.12	3.22	0 - 2.47	2.98	0 - 1.68	4.51	0.545	0.055	0.308 to 0.782
Schedule (ii)	Ariva Wintergreen	6.85 - 20.6	0.266	6.94 - 20.8	0.290	6.83 - 20.5	0.295	-0.547	0.014	-0.607 to -0.488
Schedule (ii)	Copenhagen Long Cut	14.9 - 44.6	0.130	14.3 - 42.8	0.121	14.4 - 43.1	0.118	-0.910	0.013	-0.965 to -0.854
Schedule (ii)	Fresh Strips	2.85 - 8.55	0.561	2.83 - 8.5	0.616	2.82 - 8.45	0.638	-0.219	0.017	-0.291 to -0.147
Schedule (ii)	2S3	14.2 - 42.5	0.137	14.5 - 43.6	0.152	15 - 45	0.159	-0.827	0.019	-0.907 to -0.747
Schedule (ii)	Camel SNUS Frost	12.3 - 36.8	0.137	11.4 - 34.2	0.166	11.6 - 34.7	0.159	-0.814	0.025	-0.92 to -0.708
Schedule (ii)	Mellow Sticks	2.92 - 8.76	0.632	2.67 - 8.01	0.812	6.1 - 18.3	0.276	-0.283	0.142	-0.892 to 0.326
Schedule (ii)	Fresh Orbs	2.82 - 8.46	0.792	3.29 - 9.87	0.586	2.23 - 6.7	0.904	-0.126	0.056	-0.366 to 0.114

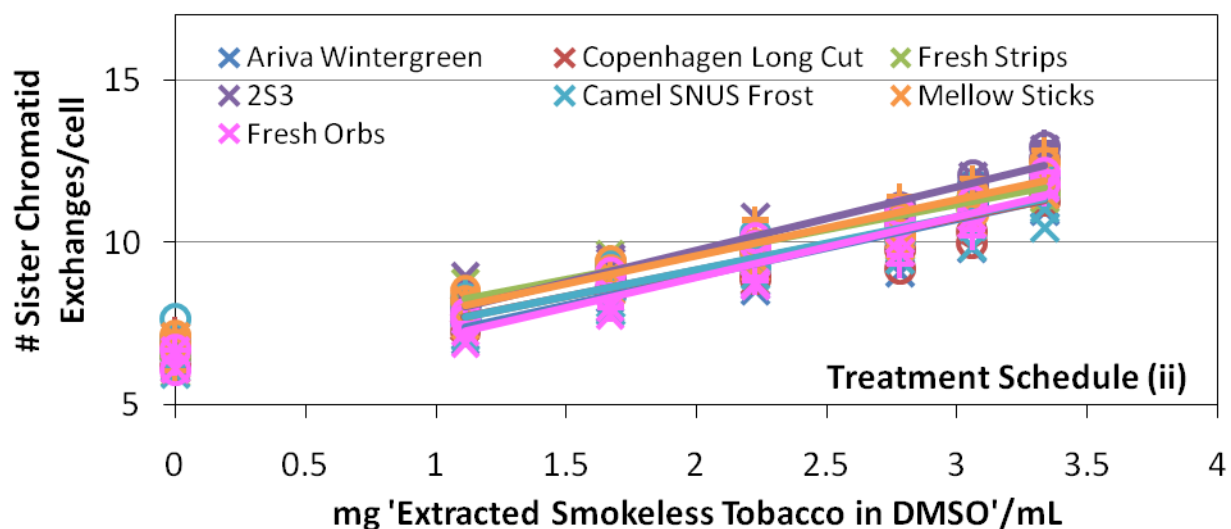
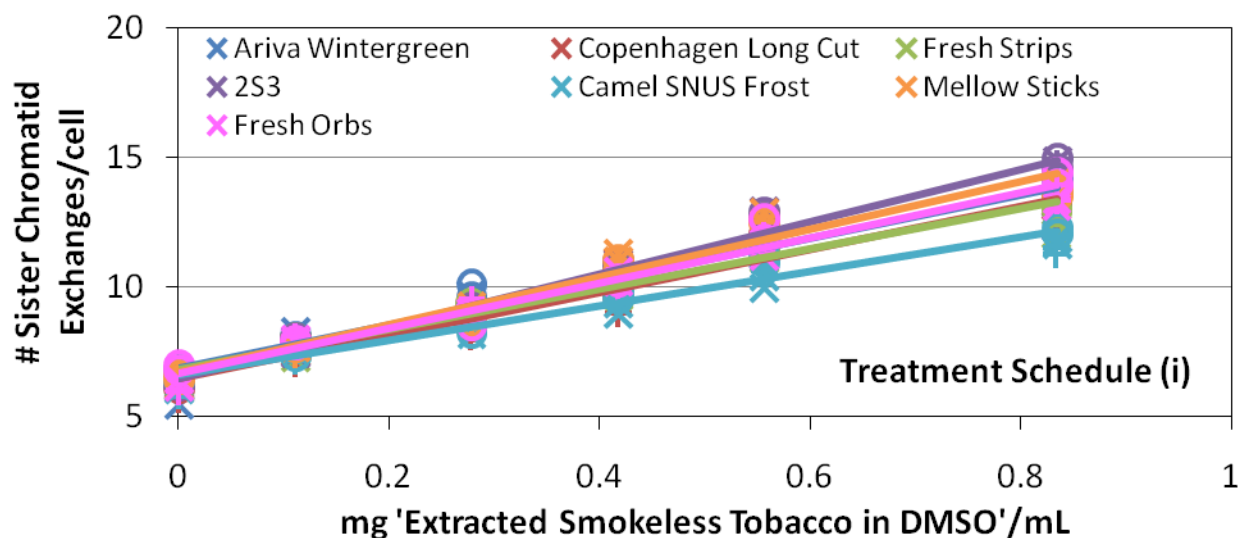
### 6.4.1.4 Number of Sister Chromatid Exchanges per cell (# SCE/cell)/['Unit of Use'/mL]

		Replicate Slope Analysis [(#SCE/cell)/('Unit'/mL)]								
Treatment Schedule	Sample Description	Replicate 1		Replicate 2		Replicate 3		Log[Slope] Statistics		
		'Unit' Dose (Unit/mL)	slope	'Unit' Dose (Unit/mL)	slope	'Unit' Dose (Unit/mL)	slope	Mean	Std. Err.	95% C.I.
Schedule (i)	Ariva Wintergreen	0 - 0.0030	2262	0 - 0.0030	2300	0 - 0.0030	2449	3.37	0.01	3.32 - 3.41
Schedule (i)	Copenhagen Long Cut	0 - 0.0003	21488	0 - 0.0003	19621	0 - 0.0003	21266	4.32	0.01	4.26 - 4.37
Schedule (i)	Fresh Strips	0 - 0.0067	933	0 - 0.0067	1035	0 - 0.0067	952	2.99	0.01	2.93 - 3.05
Schedule (i)	2S3	0 - 0.0003	25802	0 - 0.0003	24533	0 - 0.0003	25371	4.40	0.01	4.37 - 4.43
Schedule (i)	Camel SNUS Frost	0 - 0.0014	3789	0 - 0.0014	3883	0 - 0.0014	4218	3.60	0.01	3.54 - 3.66
Schedule (i)	Mellow Sticks	0 - 0.0016	4915	0 - 0.0016	4606	0 - 0.0016	4649	3.67	0.01	3.64 - 3.71
Schedule (i)	Fresh Orbs	0 - 0.0037	1838	0 - 0.0037	1985	0 - 0.0037	2038	3.29	0.01	3.23 - 3.35
Schedule (ii)	Ariva Wintergreen	0.0040 - 0.0119	460	0.0040 - 0.0119	507	0.0040 - 0.0119	507	2.69	0.01	2.63 - 2.75
Schedule (ii)	Copenhagen Long Cut	0.0004 - 0.0013	4356	0.0004 - 0.0013	3889	0.0004 - 0.0013	3813	3.60	0.02	3.53 - 3.68
Schedule (ii)	Fresh Strips	0.0089 - 0.0267	180	0.0089 - 0.0267	196	0.0089 - 0.0267	202	2.28	0.02	2.22 - 2.35
Schedule (ii)	2S3	0.0004 - 0.0013	4370	0.0004 - 0.0013	4953	0.0004 - 0.0013	5357	3.69	0.03	3.58 - 3.80
Schedule (ii)	Camel SNUS Frost	0.0019 - 0.0056	909	0.0019 - 0.0056	1019	0.0019 - 0.0056	992	2.99	0.01	2.92 - 3.05
Schedule (ii)	Mellow Sticks	0.0022 - 0.0065	858	0.0022 - 0.0065	1006	0.0022 - 0.0065	782	2.94	0.03	2.81 - 3.08
Schedule (ii)	Fresh Orbs	0.0049 - 0.0148	452	0.0049 - 0.0148	390	0.0049 - 0.0148	409	2.62	0.02	2.54 - 2.70

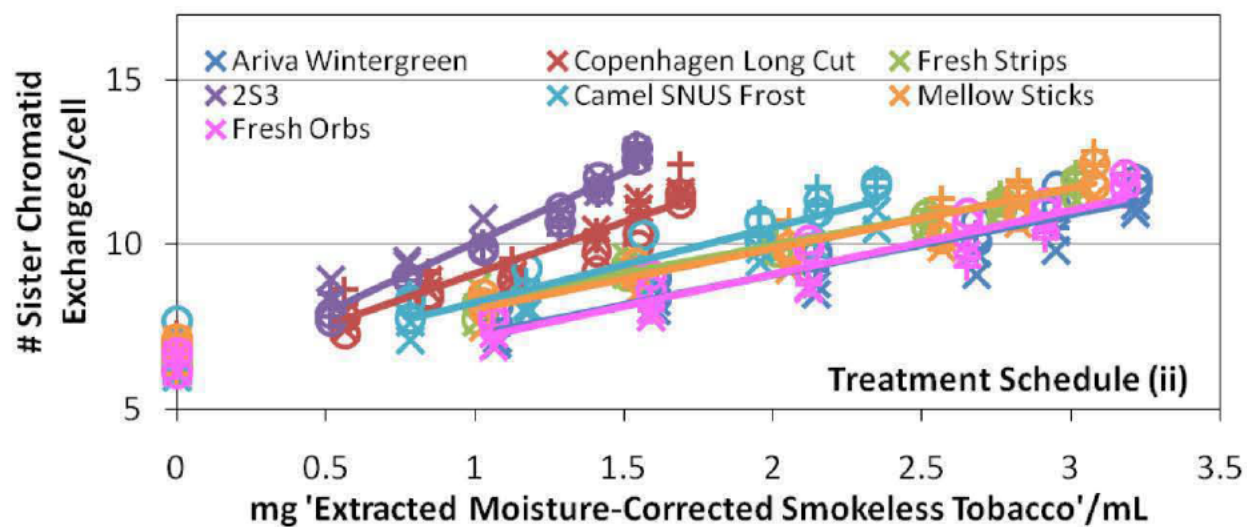
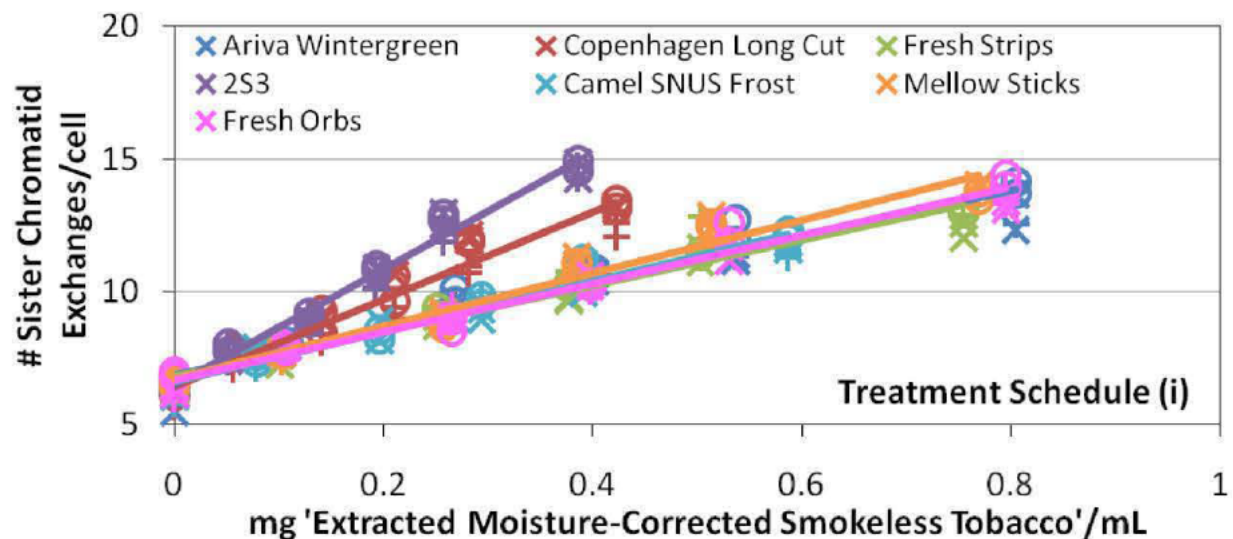
## 6.4.2 Data Plots

Plots of all replicate smokeless tobacco test samples can be found in the files *M125\_sce\_wt\_stats\_ST.xls*, *M125\_sce\_wt\_stats\_ST-H2O.xls*, *M125\_sce\_wt\_stats\_Nicotine.xls* and *M125\_sce\_wt\_stats\_Unit.xls* on the CD that accompanies this report. Box-and-Whisker plots of the calculated specific activities can also be found on the CD that accompanies this report.

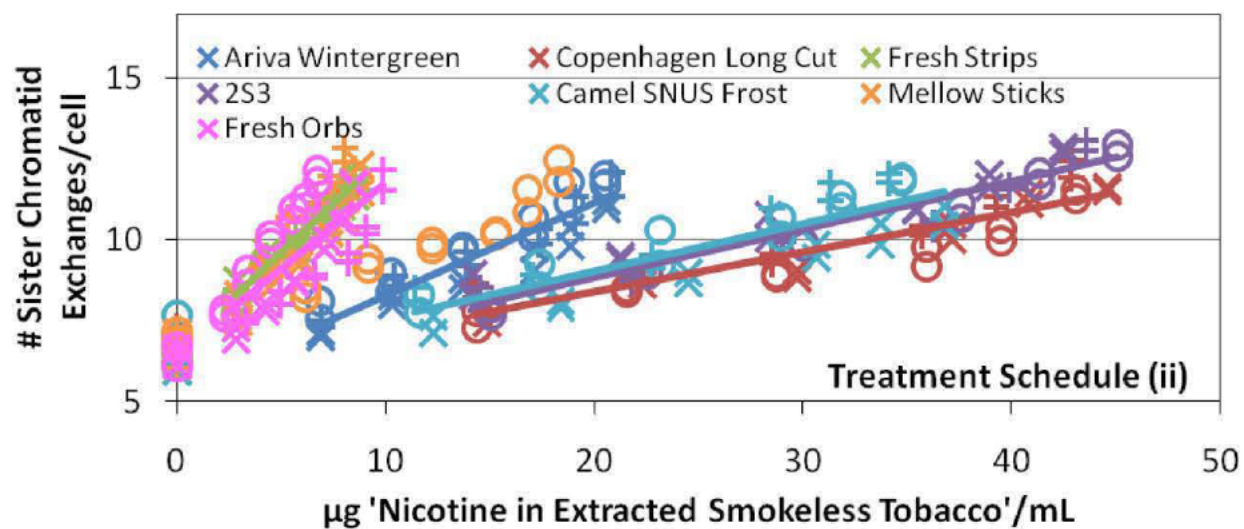
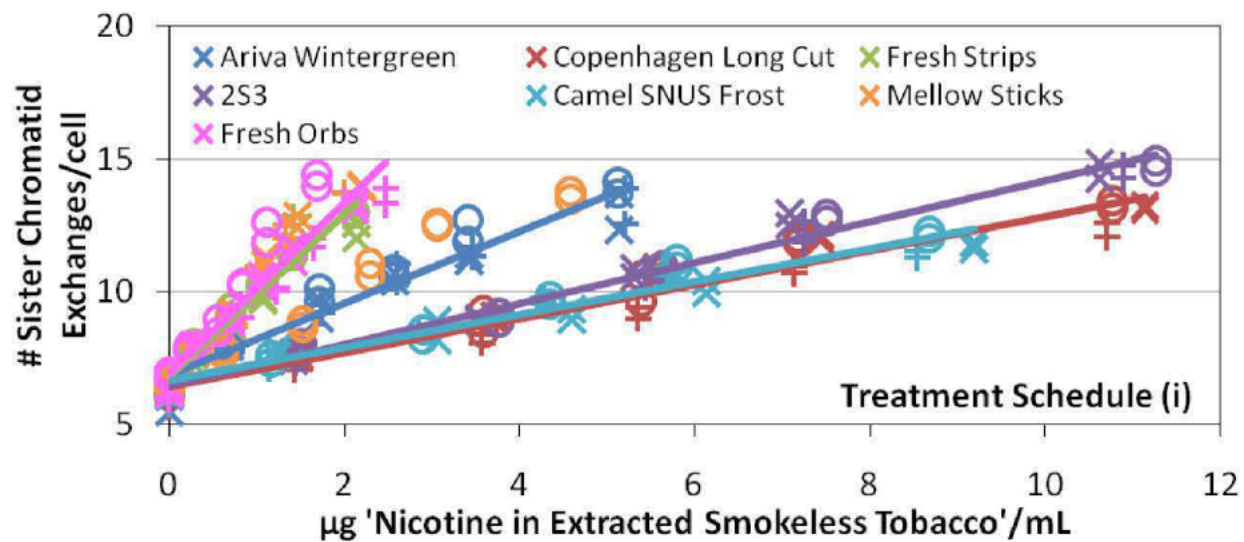
### 6.4.2.1 (# SCE/cell) vs. [mg 'Extracted Smokeless Tobacco in DMSO'/mL]



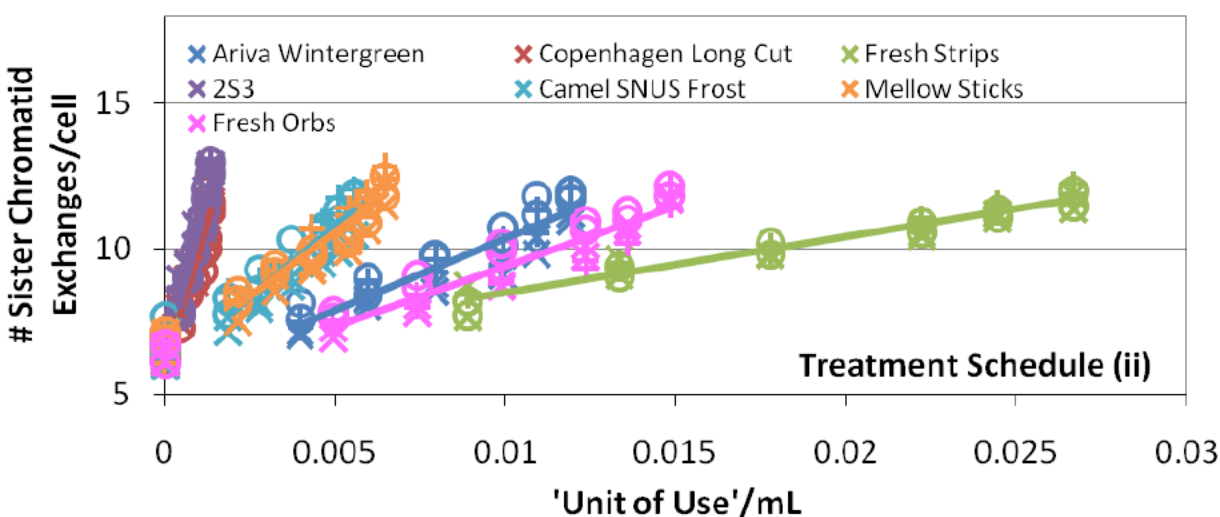
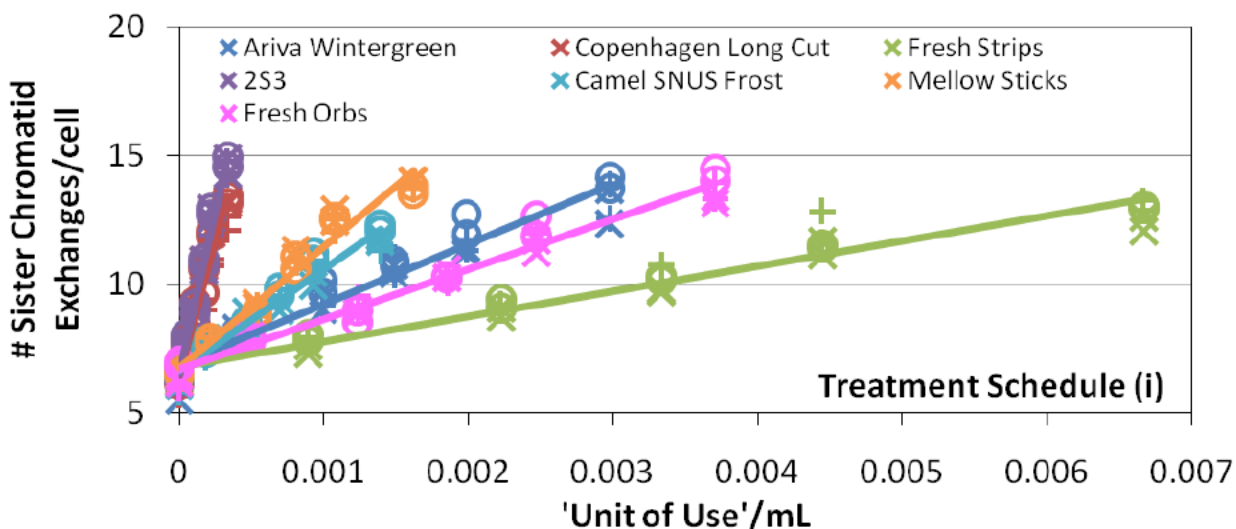
6.4.2.2 (# SCE/cell) vs. [mg 'Extracted Moisture-Corrected Smokeless Tobacco'/mL]



6.4.2.3 (# SCE/cell) vs. [ $\mu\text{g}$  'Extracted Nicotine in DMSO'/mL]



#### 6.4.2.4 (# SCE/cell) vs. ['Unit of Use'/mL]



#### 6.4.3 One-Way ANOVA Results

One-way ANOVA comparisons of mean 'extracted smokeless tobacco', 'extracted moisture-corrected smokeless tobacco', 'nicotine in extracted smokeless tobacco' and 'unit of use' log-transformed slope estimates among smokeless tobacco test samples yielded the following:

##### 6.4.3.1 'Extracted Smokeless Tobacco in DMSO'

Treatment Schedule	Variation Source	Sum of Squares	d.f.	Mean Square	F Ratio	P value
Treatment Schedule (i)	Among Samples	0.0601	6	0.0100	24.5	< 0.001
	Within Samples	0.0057	14	0.0004		
	Total	0.0658	20			
Treatment Schedule (ii)	Among Samples	0.0238	6	0.0040	3.06	0.040
	Within Samples	0.0182	14	0.0013		
	Total	0.0420	20			

One-way ANOVA analysis indicates significant differences, at  $\alpha = 0.05$ , among mean [(# SCE/cell)/(mg 'Extracted Smokeless Tobacco in DMSO'/mL)] log-transformed slope estimates for smokeless tobacco test samples assayed under treatment schedules (i) and (ii).

#### 6.4.3.2 'Extracted Moisture-Corrected Smokeless Tobacco'

Treatment Schedule	Variation Source	Sum of Squares	d.f.	Mean Square	F Ratio	P value
Treatment Schedule (i)	Among Samples	0.4630	6	0.0772	188.7	< 0.001
	Within Samples	0.0057	14	0.0004		
	Total	0.4687	20			
Treatment Schedule (ii)	Among Samples	0.3939	6	0.0656	50.5	< 0.001
	Within Samples	0.0182	14	0.0013		
	Total	0.4121	20			

One-way ANOVA analysis indicates significant differences, at  $\alpha = 0.05$ , among mean [(# SCE/cell)/(mg 'Extracted Moisture-Corrected Smokeless Tobacco in DMSO'/mL)] log-transformed slope estimates for smokeless tobacco test samples assayed under treatment schedules (i) and (ii).

#### 6.4.3.3 'Nicotine in Extracted Smokeless Tobacco'

Treatment Schedule	Variation Source	Sum of Squares	d.f.	Mean Square	F Ratio	P value
Treatment Schedule (i)	Among Samples	2.013	6	0.3356	44.49	< 0.001
	Within Samples	0.106	14	0.0075		
	Total	2.119	20			
Treatment Schedule (ii)	Among Samples	1.903	6	0.3172	29.91	< 0.001
	Within Samples	0.1485	14	0.0106		
	Total	2.052	20			

One-way ANOVA analysis indicates significant differences, at  $\alpha = 0.05$ , among mean [(# SCE/cell)/(μg 'Nicotine in Extracted Smokeless Tobacco'/mL)] log-transformed slope estimates for smokeless tobacco test samples assayed under treatment schedules (i) and (ii).

#### 6.4.3.4 'Unit of Use'

Treatment Schedule	Variation Source	Sum of Squares	d.f.	Mean Square	F Ratio	P value
Treatment Schedule (i)	Among Samples	4.9809	6	0.8302	2029.9	< 0.001
	Within Samples	0.0057	14	0.0004		
	Total	4.9867	20			
Treatment Schedule (ii)	Among Samples	4.7666	6	0.7944	610.98	< 0.001
	Within Samples	0.0182	14	0.0013		
	Total	4.7848	20			

One-way ANOVA analysis indicates significant differences, at  $\alpha = 0.05$ , among mean [(# SCE/cell)/('unit of use'/mL)] log-transformed slope estimates for smokeless tobacco test samples assayed under treatment schedules (i) and (ii).

### 6.4.4 Contrasts of Interest

(b) (4)

The tables below show ANOVA-based comparison results for both treatment schedules along with identified homogenous brand groupings.

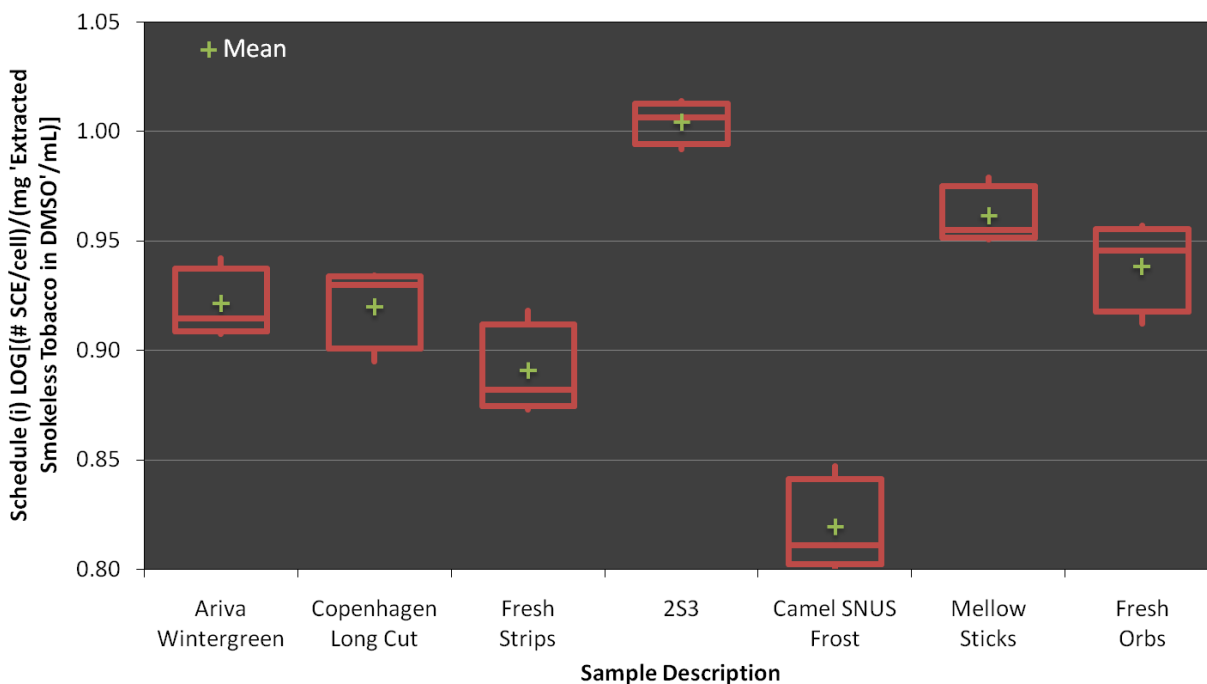
#### 6.4.4.1 (# SCE/cell) / (mg 'Extracted Smokeless Tobacco in DMSO'/mL)

ANOVA-Based Comparison	Treatment Schedule (i)			Treatment Schedule (ii)		
	f-ratio	p-value	significance at $\alpha = 0.05$	f-ratio	p-value	significance at $\alpha = 0.05$
Ariva Wintergreen vs. Copenhagen Long Cut	0.01	0.9196	not significant	1.70	0.2135	not significant
Ariva Wintergreen vs. Fresh Strips	3.39	0.0869	not significant	3.68	0.0756	not significant
Ariva Wintergreen vs. 2S3	25.08	0.0002	<b>significant</b>	2.47	0.1380	not significant
Ariva Wintergreen vs. Camel SNUS Frost	38.05	0.0000	<b>significant</b>	1.35	0.2642	not significant
Ariva Wintergreen vs. Mellow Sticks	5.91	0.0291	not significant	0.21	0.6545	not significant
Ariva Wintergreen vs. Fresh Orbs	1.05	0.3232	not significant	0.63	0.4414	not significant
Copenhagen Long Cut vs. Fresh Strips	3.02	0.1041	not significant	0.38	0.5480	not significant
Copenhagen Long Cut vs. 2S3	26.12	0.0002	<b>significant</b>	8.27	0.0122	not significant
Copenhagen Long Cut vs. Camel SNUS Frost	36.79	0.0000	<b>significant</b>	0.02	0.8905	not significant
Copenhagen Long Cut vs. Mellow Sticks	6.42	0.0239	not significant	0.72	0.4117	not significant
Copenhagen Long Cut vs. Fresh Orbs	1.27	0.2788	not significant	4.39	0.0548	not significant
Fresh Strips vs. 2S3	46.90	0.0000	<b>significant</b>	12.19	0.0036	not significant
Fresh Strips vs. Camel SNUS Frost	18.72	0.0007	<b>significant</b>	0.57	0.4623	not significant
Fresh Strips vs. Mellow Sticks	18.25	0.0008	<b>significant</b>	2.14	0.1659	not significant
Fresh Strips vs. Fresh Orbs	8.21	0.0125	not significant	7.35	0.0169	not significant
2S3 vs. Camel SNUS Frost	124.90	0.0000	<b>significant</b>	7.49	0.0161	not significant
2S3 vs. Mellow Sticks	6.64	0.0220	not significant	4.12	0.0618	not significant
2S3 vs. Fresh Orbs	15.87	0.0014	<b>significant</b>	0.61	0.4479	not significant
Camel SNUS Frost vs. Mellow Sticks	73.95	0.0000	<b>significant</b>	0.50	0.4919	not significant
Camel SNUS Frost vs. Fresh Orbs	51.73	0.0000	<b>significant</b>	3.82	0.0708	not significant
Mellow Sticks vs. Fresh Orbs	1.98	0.1812	not significant	1.56	0.2319	not significant

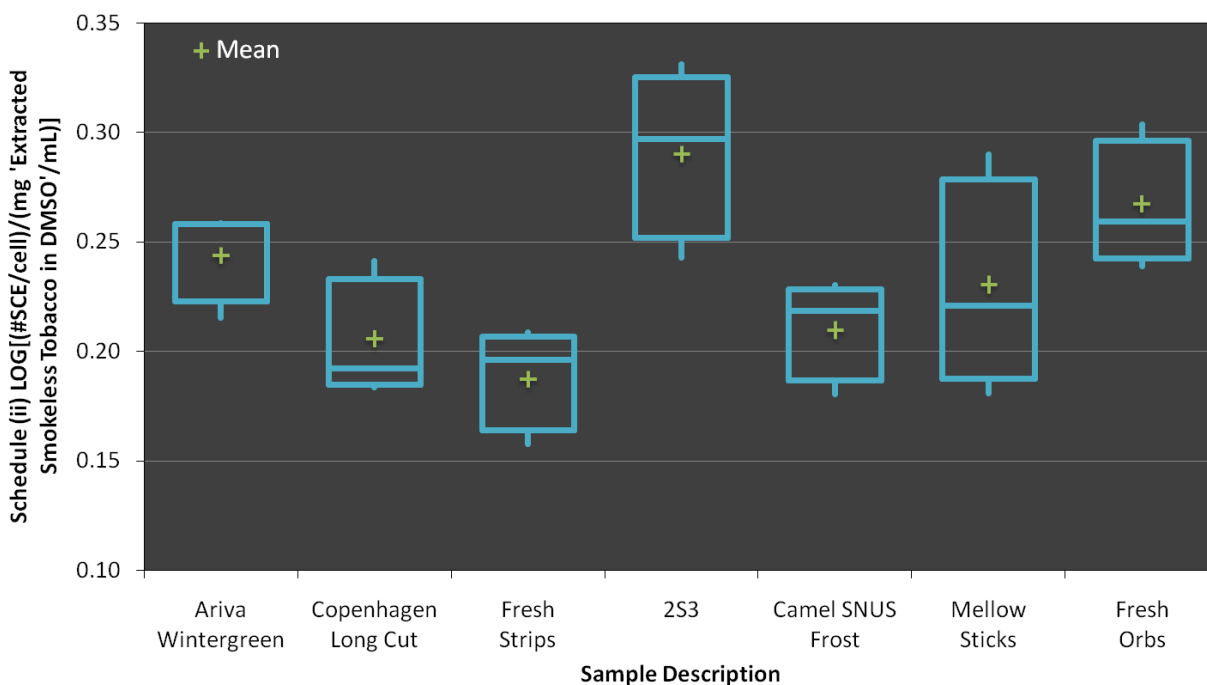
#### ANOVA-Based Homogenous Groupings: Treatment Schedule (i)

Client Description	Log-Transformed Slope Statistics		ANOVA-based Homogenous Groups
	Mean	Std. Err.	
Camel SNUS Frost	0.819	0.014	<b>X</b>
Fresh Strips	0.891	0.014	<b>X</b>
Copenhagen Long Cut	0.920	0.012	<b>XX</b>
Ariva Wintergreen	0.921	0.011	<b>XX</b>
Fresh Orbs	0.938	0.013	<b>XX</b>
Mellow Sticks	0.961	0.009	<b>XX</b>
2S3	1.00	0.01	<b>X</b>

Under treatment schedule (i), ANOVA-based comparison p-values less than the Bonferroni-adjusted  $\alpha = 0.05$  indicate that significant differences in mean 'extracted smokeless tobacco in DMSO' log-transformed slope were detected between various pairs of test samples. Specifically, **Camel SNUS Frost** appears to have a significantly lower log-transformed slope than any other test sample under treatment schedule (i).



Under treatment schedule (ii), no ANOVA-based comparison p-values were less than the Bonferroni-adjusted  $\alpha = 0.05$ , indicating no significant differences in mean 'extracted smokeless tobacco in DMSO' log-transformed slope were detected between any smokeless tobacco brand pairs.



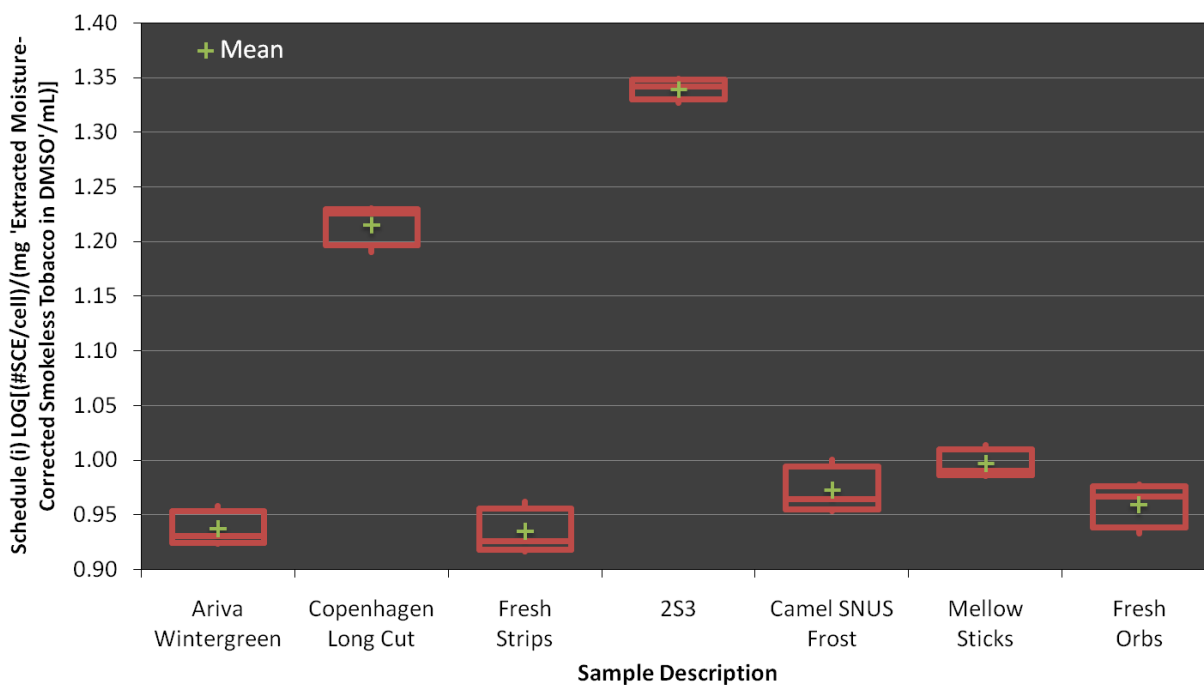
## 6.4.4.2 (# SCE/cell) / (mg 'Extracted Moisture-Corrected Smokeless Tobacco'/mL)

ANOVA-Based Comparison	Treatment Schedule (i)			Treatment Schedule (ii)		
	f-ratio	p-value	significance at $\alpha = 0.05$	f-ratio	p-value	significance at $\alpha = 0.05$
Ariva Wintergreen vs. Copenhagen Long Cut	284.09	0.0000	significant	67.36	0.0000	significant
Ariva Wintergreen vs. Fresh Strips	0.02	0.8807	not significant	0.95	0.3475	not significant
Ariva Wintergreen vs. 2S3	593.60	0.0000	significant	154.47	0.0000	significant
Ariva Wintergreen vs. Camel SNUS Frost	4.58	0.0503	not significant	12.23	0.0036	not significant
Ariva Wintergreen vs. Mellow Sticks	12.95	0.0029	not significant	0.04	0.8465	not significant
Ariva Wintergreen vs. Fresh Orbs	1.77	0.2045	not significant	0.93	0.3512	not significant
Copenhagen Long Cut vs. Fresh Strips	289.26	0.0000	significant	84.26	0.0000	significant
Copenhagen Long Cut vs. 2S3	56.38	0.0000	significant	17.82	0.0009	significant
Copenhagen Long Cut vs. Camel SNUS Frost	216.50	0.0000	significant	22.18	0.0003	significant
Copenhagen Long Cut vs. Mellow Sticks	175.74	0.0000	significant	64.16	0.0000	significant
Copenhagen Long Cut vs. Fresh Orbs	241.00	0.0000	significant	52.46	0.0000	significant
Fresh Strips vs. 2S3	601.07	0.0000	significant	179.59	0.0000	significant
Fresh Strips vs. Camel SNUS Frost	5.26	0.0378	not significant	19.97	0.0005	significant
Fresh Strips vs. Mellow Sticks	14.07	0.0021	significant	1.37	0.2618	not significant
Fresh Strips vs. Fresh Orbs	2.20	0.1600	not significant	3.75	0.0732	not significant
2S3 vs. Camel SNUS Frost	493.85	0.0000	significant	79.78	0.0000	significant
2S3 vs. Mellow Sticks	431.22	0.0000	significant	149.61	0.0000	significant
2S3 vs. Fresh Orbs	530.52	0.0000	significant	131.43	0.0000	significant
Camel SNUS Frost vs. Mellow Sticks	2.12	0.1672	not significant	10.89	0.0053	not significant
Camel SNUS Frost vs. Fresh Orbs	0.66	0.4313	not significant	6.41	0.0239	not significant
Mellow Sticks vs. Fresh Orbs	5.14	0.0397	not significant	0.59	0.4557	not significant

## ANOVA-Based Homogenous Groupings: Treatment Schedule (i)

Client Description	Log-Transformed Slope Statistics		ANOVA-based Homogenous Groups
	Mean	Std. Err.	
Fresh Strips	0.934	0.014	X
Ariva Wintergreen	0.937	0.011	XX
Fresh Orbs	0.959	0.013	XX
Camel SNUS Frost	0.972	0.014	XX
Mellow Sticks	0.996	0.009	X
Copenhagen Long Cut	1.22	0.01	X
2S3	1.34	0.01	X

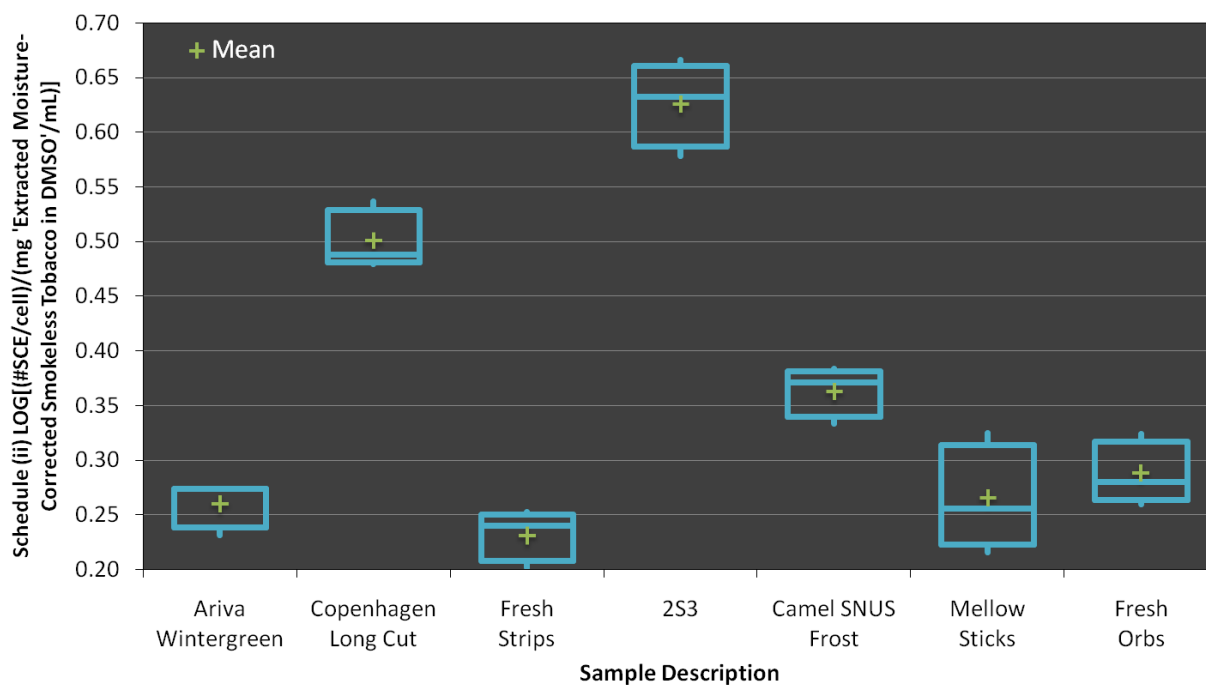
Under treatment schedule (i), ANOVA-based comparison p-values less than the Bonferroni-adjusted  $\alpha = 0.05$  indicate that significant differences in mean 'extracted moisture-corrected smokeless tobacco in DMSO' log-transformed slope were detected between various pairs of test samples. Specifically, **Copenhagen Long Cut** and **2S3** appear to have log-transformed slopes that are different (i.e. higher) than all other test samples under treatment schedule (i) with **2S3 > Copenhagen Long Cut**.



#### ANOVA-Based Homogenous Groupings: Treatment Schedule (ii)

Client Description	Log-Transformed Slope Statistics		ANOVA-based Homogenous Groups
	Mean	Std. Err.	
Fresh Strips	0.231	0.015	X
Ariva Wintergreen	0.259	0.014	XX
Mellow Sticks	0.265	0.032	XX
Fresh Orbs	0.288	0.019	XX
Camel SNUS Frost	0.362	0.015	X
Copenhagen Long Cut	0.501	0.018	X
2S3	0.625	0.026	X

Under treatment schedule (ii), ANOVA-based comparison p-values less than the Bonferroni-adjusted  $\alpha = 0.05$  indicate that significant differences in mean 'extracted moisture-corrected smokeless tobacco in DMSO' log-transformed slope were detected between various pairs of test samples. As with schedule (i), **Copenhagen Long Cut** and **2S3** appear to have log-transformed slopes that are higher than all other test samples under treatment schedule (ii), with **2S3 > Copenhagen Long Cut**.



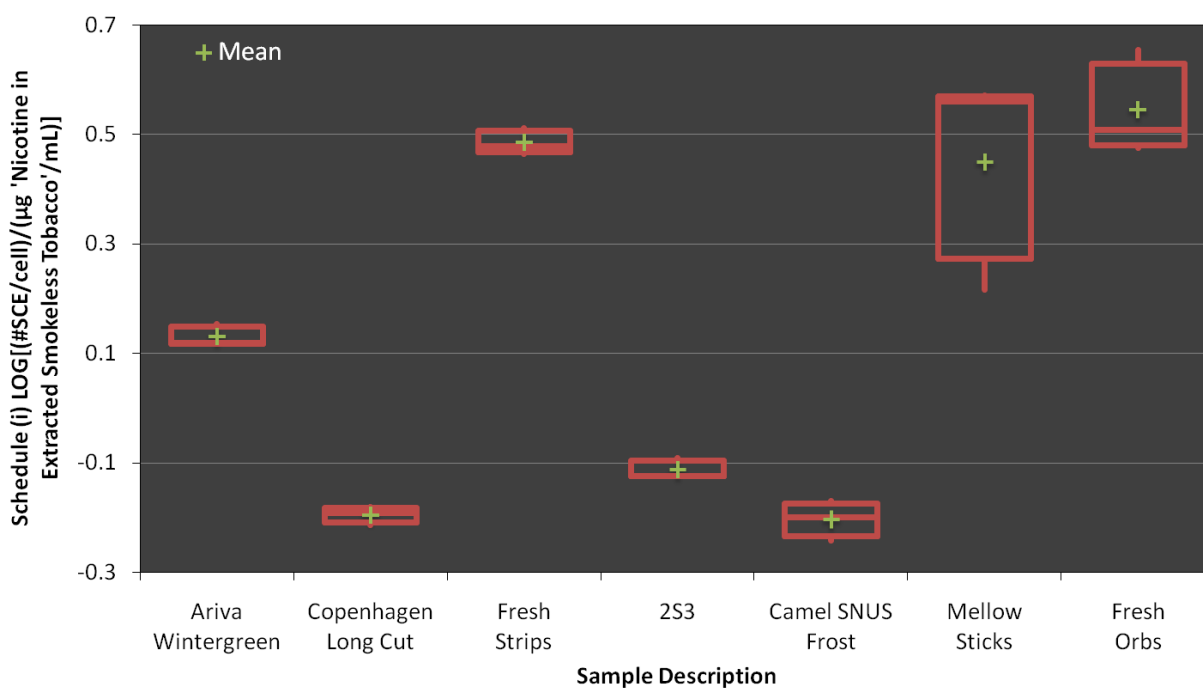
#### 6.4.4.3 (# SCE/cell) / ( $\mu\text{g}$ 'Extracted Nicotine in Smokeless Tobacco'/mL)

ANOVA-Based Comparison	Treatment Schedule (i)			Treatment Schedule (ii)		
	f-ratio	p-value	significance at $\alpha = 0.05$	f-ratio	p-value	significance at $\alpha = 0.05$
Ariva Wintergreen vs. Copenhagen Long Cut	21.12	0.0004	significant	18.59	0.0007	significant
Ariva Wintergreen vs. Fresh Strips	24.97	0.0002	significant	15.24	0.0016	significant
Ariva Wintergreen vs. 2S3	11.78	0.0040	not significant	11.07	0.0050	not significant
Ariva Wintergreen vs. Camel SNUS Frost	22.19	0.0003	significant	10.04	0.0068	not significant
Ariva Wintergreen vs. Mellow Sticks	20.12	0.0005	significant	9.90	0.0072	not significant
Ariva Wintergreen vs. Fresh Orbs	34.25	0.0000	significant	25.12	0.0002	significant
Copenhagen Long Cut vs. Fresh Strips	92.01	0.0000	significant	67.50	0.0000	significant
Copenhagen Long Cut vs. 2S3	1.35	0.2641	not significant	0.97	0.3414	not significant
Copenhagen Long Cut vs. Camel SNUS Frost	0.01	0.9097	not significant	1.31	0.2723	not significant
Copenhagen Long Cut vs. Mellow Sticks	82.47	0.0000	significant	55.62	0.0000	significant
Copenhagen Long Cut vs. Fresh Orbs	109.15	0.0000	significant	86.94	0.0000	significant
Fresh Strips vs. 2S3	71.05	0.0000	significant	52.29	0.0000	significant
Fresh Strips vs. Camel SNUS Frost	94.24	0.0000	significant	50.03	0.0000	significant
Fresh Strips vs. Mellow Sticks	0.26	0.6171	not significant	0.58	0.4608	not significant
Fresh Strips vs. Fresh Orbs	0.73	0.4068	not significant	1.23	0.2865	not significant
2S3 vs. Camel SNUS Frost	1.64	0.2217	not significant	0.02	0.8767	not significant
2S3 vs. Mellow Sticks	62.69	0.0000	significant	41.90	0.0000	significant
2S3 vs. Fresh Orbs	86.20	0.0000	significant	69.54	0.0000	significant
Camel SNUS Frost vs. Mellow Sticks	84.58	0.0000	significant	39.88	0.0000	significant
Camel SNUS Frost vs. Fresh Orbs	111.58	0.0000	significant	66.93	0.0000	significant
Mellow Sticks vs. Fresh Orbs	1.87	0.1933	not significant	3.48	0.0831	not significant

### ANOVA-Based Homogenous Groupings: Treatment Schedule (i)

Client Description	Log-Transformed Slope Statistics		ANOVA-based Homogenous Groups
	Mean	Std. Err.	
Camel SNUS Frost	-0.204	0.021	X
Copenhagen Long Cut	-0.196	0.010	X
2S3	-0.113	0.011	XX
Ariva Wintergreen	0.130	0.012	X
Mellow Sticks	0.448	0.117	X
Fresh Strips	0.485	0.014	X
Fresh Orbs	0.545	0.055	X

Under treatment schedule (i), ANOVA-based comparison p-values less than the Bonferroni-adjusted  $\alpha = 0.05$  indicate that significant differences in mean 'nicotine in extracted smokeless tobacco' log-transformed slope were detected between various pairs of test samples. Specifically, {Camel SNUS Frost, Copenhagen Long Cut} < Ariva Wintergreen < {Mellow Sticks<sup>12</sup>, Fresh Strips, Fresh Orbs}.

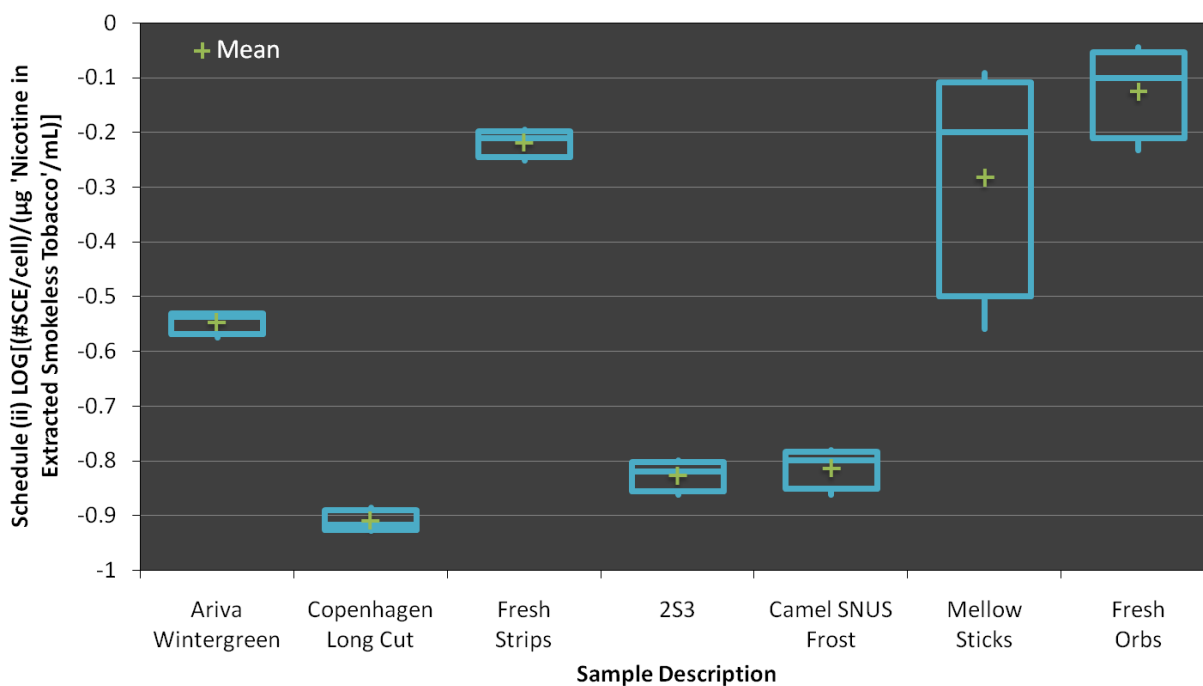


<sup>12</sup> the nicotine extraction efficiency for the 3 replicate Mellow Sticks extracts was quite variable (see section 5.3 for further details), which may affect all slope comparison conclusions involving this brand on a nicotine dose basis.

**ANOVA-Based Homogenous Groupings: Treatment Schedule (ii)**

Client Description	Log-Transformed Slope Statistics		ANOVA-based Homogenous Groups
	Mean	Std. Err.	
Copenhagen Long Cut	-0.910	0.013	X
2S3	-0.827	0.019	XX
Camel SNUS Frost	-0.814	0.025	XX
Ariva Wintergreen	-0.547	0.014	XX
Mellow Sticks	-0.283	0.142	XX
Fresh Strips	-0.219	0.017	X
Fresh Orbs	-0.126	0.056	X

Under treatment schedule (ii), ANOVA-based comparison p-values less than the Bonferroni-adjusted  $\alpha = 0.05$  indicate that significant differences in mean 'nicotine in extracted smokeless tobacco' log-transformed slope were detected between various pairs of test samples. Specifically, **{Copenhagen Long Cut} < Ariva Wintergreen < {Fresh Strips, Fresh Orbs}**.



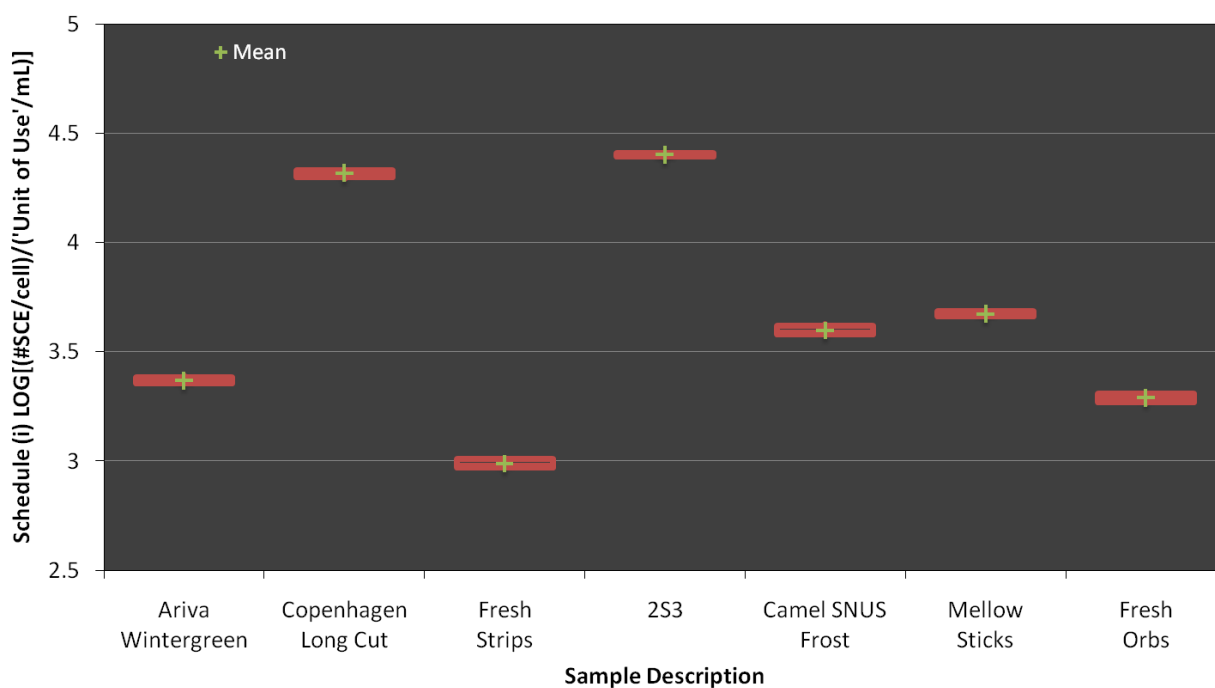
## 6.4.4.4 (# SCE/cell) / ('Unit of Use'/mL)

ANOVA-Based Comparison	Treatment Schedule (i)			Treatment Schedule (ii)		
	f-ratio	p-value	significance at $\alpha = 0.05$	f-ratio	p-value	significance at $\alpha = 0.05$
Ariva Wintergreen vs. Copenhagen Long Cut	3304	5.0E-18	significant	960	2.7E-14	significant
Ariva Wintergreen vs. Fresh Strips	531	1.6E-12	significant	191	1.5E-09	significant
Ariva Wintergreen vs. 2S3	3917	1.5E-18	significant	1147	7.8E-15	significant
Ariva Wintergreen vs. Camel SNUS Frost	193	1.4E-09	significant	102	8.5E-08	significant
Ariva Wintergreen vs. Mellow Sticks	343	3.1E-11	significant	73.3	6.2E-07	significant
Ariva Wintergreen vs. Fresh Orbs	22.4	3.2E-04	significant	5.92	0.0289	not significant
Copenhagen Long Cut vs. Fresh Strips	6485	4.5E-20	significant	2008	1.6E-16	significant
Copenhagen Long Cut vs. 2S3	26.1	1.6E-04	significant	8.27	0.0122	not significant
Copenhagen Long Cut vs. Camel SNUS Frost	1901	2.3E-16	significant	437	5.9E-12	significant
Copenhagen Long Cut vs. Mellow Sticks	1519	1.1E-15	significant	503	2.3E-12	significant
Copenhagen Long Cut vs. Fresh Orbs	3870	1.7E-18	significant	1117	9.4E-15	significant
Fresh Strips vs. 2S3	7334	1.9E-20	significant	2274	6.8E-17	significant
Fresh Strips vs. Camel SNUS Frost	1364	2.4E-15	significant	571	9.5E-13	significant
Fresh Strips vs. Mellow Sticks	1727	4.6E-16	significant	501	2.3E-12	significant
Fresh Strips vs. Fresh Orbs	336	3.5E-11	significant	130	1.8E-08	significant
2S3 vs. Camel SNUS Frost	2373	5.0E-17	significant	566	1.0E-12	significant
2S3 vs. Mellow Sticks	1943	2.0E-16	significant	640	4.3E-13	significant
2S3 vs. Fresh Orbs	4531	5.5E-19	significant	1318	3.0E-15	significant
Camel SNUS Frost vs. Mellow Sticks	21.5	3.9E-04	significant	2.31	0.1510	not significant
Camel SNUS Frost vs. Fresh Orbs	346	2.9E-11	significant	157	5.5E-09	significant
Mellow Sticks vs. Fresh Orbs	540	1.4E-12	significant	121	2.9E-08	significant

**ANOVA-Based Homogenous Groupings: Treatment Schedule (i)**

Client Description	Log-Transformed Slope Statistics		ANOVA-based Homogenous Groups
	Mean	Std. Err.	
Fresh Strips	2.99	0.01	X
Fresh Orbs	3.29	0.01	X
Ariva Wintergreen	3.37	0.01	X
Camel SNUS Frost	3.60	0.01	X
Mellow Sticks	3.67	0.01	X
Copenhagen Long Cut	4.32	0.01	X
2S3	4.40	0.01	X

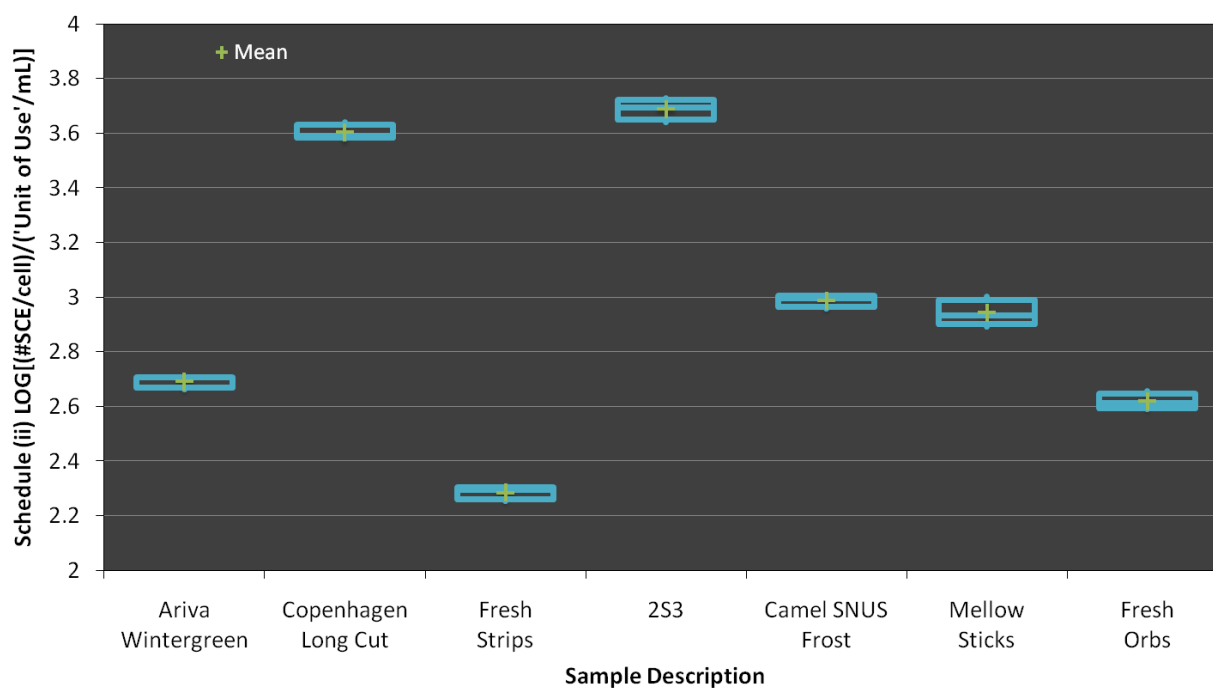
Under treatment schedule (i), ANOVA-based comparison p-values less than the Bonferroni-adjusted  $\alpha = 0.05$  indicate that significant differences in mean 'unit of use' log-transformed slope were detected between **every** pair of test samples. Specifically, **Fresh Strips < Fresh Orbs < Ariva Wintergreen < Camel SNUS Frost < Mellow Sticks < Copenhagen Long Cut < 2S3**.



**ANOVA-Based Homogenous Groupings: Treatment Schedule (ii)**

Client Description	Log-Transformed Slope Statistics		ANOVA-based Homogenous Groups
	Mean	Std. Err.	
Fresh Strips	2.28	0.02	X
Fresh Orbs	2.62	0.02	X
Ariva Wintergreen	2.69	0.01	X
Mellow Sticks	2.94	0.03	X
Camel SNUS Frost	2.99	0.01	X
Copenhagen Long Cut	3.60	0.02	X
2S3	3.69	0.03	X

Under treatment schedule (ii), ANOVA-based comparison p-values less than the Bonferroni-adjusted  $\alpha = 0.05$  indicate that significant differences in mean 'unit of use' log-transformed slope were detected between various pairs of test samples. Specifically, **{Fresh Strips} < {Fresh Orbs, Ariva Wintergreen} < {Mellow Sticks, Camel SNUS Frost} < {Copenhagen Long Cut, 2S3}**.



## 6.5 Comparisons between Smoked and Smokeless Tobacco Products

### 6.5.1 Individual Replicate Slopes and Log-Transformed Slope Statistics

Tables of results were obtained for the individual replicate slope estimates, and the summary statistics, on a 'nicotine in total particulate matter (TPM)' (1002248) and 'nicotine in extracted smokeless tobacco' dose basis, as well as a 'cigarette' (1002248) and 'unit of use' dose basis, over the three replicate log-transformed slopes for each smoked and smokeless tobacco test sample under both treatment schedules.

#### 6.5.1.1 (# SCE/cell)/[µg 'Nicotine'/mL]

		Replicate Slopes [(#SCE/cell)/(µg 'Nicotine'/mL)]								
Treatment	Sample	Replicate 1		Replicate 2		Replicate 3		Log[Slope] Statistics		
Schedule	Description	'Nic' Dose (µg/mL)	slope	'Nic' Dose (µg/mL)	slope	'Nic' Dose (µg/mL)	slope	Mean	Std. Err.	95% C.I.
Schedule (i)	Ariva Wintergreen	0 - 5.14	1.31	0 - 5.21	1.32	0 - 5.121	1.42	0.130	0.012	0.079 to 0.181
Schedule (i)	Copenhagen Long Cut	0 - 11.1	0.643	0 - 10.7	0.611	0 - 10.8	0.658	-0.196	0.010	-0.237 to -0.154
Schedule (i)	Fresh Strips	0 - 2.14	2.91	0 - 2.13	3.25	0 - 2.11	3.01	0.485	0.014	0.424 to 0.545
Schedule (i)	2S3	0 - 10.6	0.810	0 - 10.9	0.751	0 - 11.3	0.751	-0.113	0.011	-0.16 to -0.066
Schedule (i)	Camel SNUS Frost	0 - 9.19	0.573	0 - 8.54	0.632	0 - 8.68	0.675	-0.204	0.021	-0.293 to -0.115
Schedule (i)	Mellow Sticks	0 - 2.19	3.62	0 - 2	3.72	0 - 4.58	1.64	0.448	0.117	-0.053 to 0.95
Schedule (i)	Fresh Orbs	0 - 2.12	3.22	0 - 2.47	2.98	0 - 1.68	4.51	0.545	0.055	0.308 to 0.782
Schedule (i)	KR 2R4F	0 - 4.91	3.28	0 - 5.37	2.83	0 - 5.06	3.03	0.483	0.019	0.403 to 0.563
Schedule (ii)	Ariva Wintergreen	6.85 - 20.6	0.266	6.94 - 20.8	0.290	6.83 - 20.5	0.295	-0.547	0.014	-0.607 to -0.488
Schedule (ii)	Copenhagen Long Cut	14.9 - 44.6	0.130	14.3 - 42.8	0.121	14.4 - 43.1	0.118	-0.910	0.013	-0.965 to -0.854
Schedule (ii)	Fresh Strips	2.85 - 8.55	0.561	2.83 - 8.5	0.616	2.82 - 8.45	0.638	-0.219	0.017	-0.291 to -0.147
Schedule (ii)	2S3	14.2 - 42.5	0.137	14.5 - 43.6	0.152	15 - 45	0.159	-0.827	0.019	-0.907 to -0.747
Schedule (ii)	Camel SNUS Frost	12.3 - 36.8	0.137	11.4 - 34.2	0.166	11.6 - 34.7	0.159	-0.814	0.025	-0.92 to -0.708
Schedule (ii)	Mellow Sticks	2.92 - 8.76	0.632	2.67 - 8.01	0.812	6.1 - 18.3	0.276	-0.283	0.142	-0.892 to 0.326
Schedule (ii)	Fresh Orbs	2.82 - 8.46	0.792	3.29 - 9.87	0.586	2.23 - 6.7	0.904	-0.126	0.056	-0.366 to 0.114
Schedule (ii)	KR 2R4F	6.54 - 19.6	0.670	7.16 - 21.5	0.616	6.75 - 20.2	0.688	-0.182	0.015	-0.245 to -0.12

#### 6.5.1.2 (# SCE/cell)/['Unit of Use'/mL]

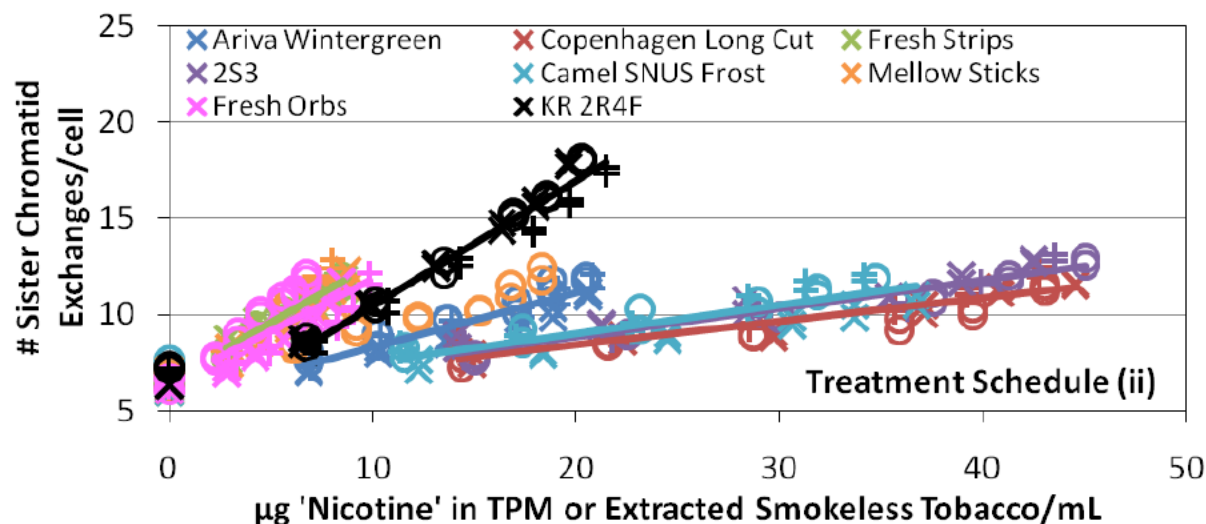
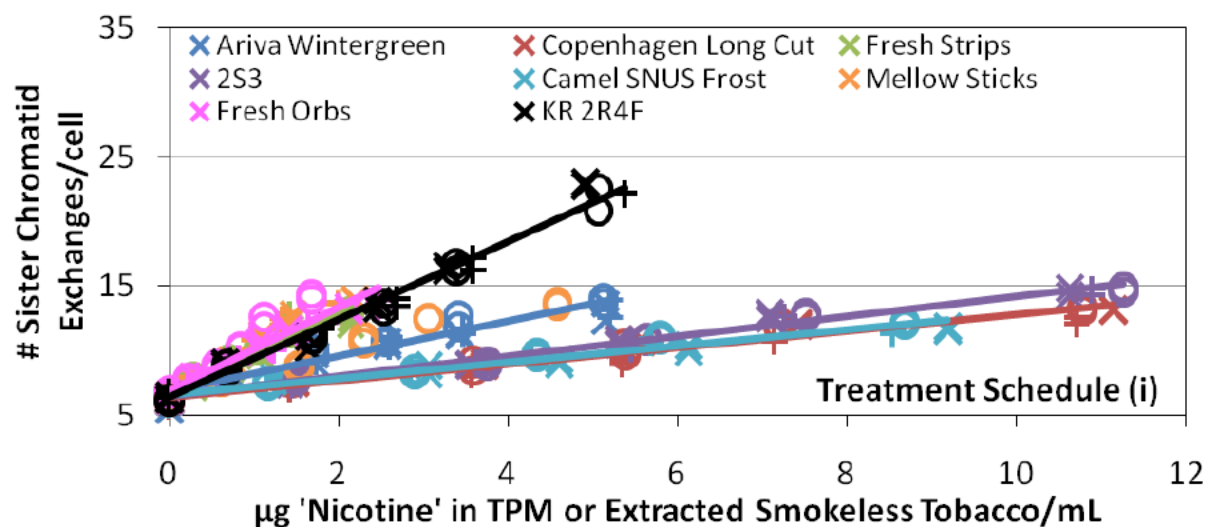
		Replicate Slopes [(#SCE/cell)/('Unit of Use'/mL)]								
Treatment	Sample	Replicate 1		Replicate 2		Replicate 3		Log[Slope] Statistics		
Schedule	Description	'Unit' Dose (unit/mL)	slope	'Unit' Dose (unit/mL)	slope	'Unit' Dose (unit/mL)	slope	Mean	Std. Err.	95% C.I.
Schedule (i)	Ariva Wintergreen	0 - 0.0030	2262	0 - 0.0030	2300	0 - 0.0030	2449	3.37	0.01	3.32 to 3.41
Schedule (i)	Copenhagen Long Cut	0 - 0.0003	21488	0 - 0.0003	19621	0 - 0.0003	21266	4.32	0.01	4.26 to 4.37
Schedule (i)	Fresh Strips	0 - 0.0067	933	0 - 0.0067	1035	0 - 0.0067	952	2.99	0.01	2.93 to 3.05
Schedule (i)	2S3	0 - 0.0003	25802	0 - 0.0003	24533	0 - 0.0003	25371	4.40	0.01	4.37 to 4.43
Schedule (i)	Camel SNUS Frost	0 - 0.0014	3789	0 - 0.0014	3883	0 - 0.0014	4218	3.60	0.01	3.54 to 3.66
Schedule (i)	Mellow Sticks	0 - 0.0016	4915	0 - 0.0016	4606	0 - 0.0016	4649	3.67	0.01	3.64 to 3.71
Schedule (i)	Fresh Orbs	0 - 0.0037	1838	0 - 0.0037	1985	0 - 0.0037	2038	3.29	0.01	3.23 to 3.35
Schedule (i)	KR 2R4F	0 - 0.0067	2408	0 - 0.0071	2147	0 - 0.0071	2168	3.35	0.02	3.28 to 3.42
Schedule (ii)	Ariva Wintergreen	0.0040 - 0.0119	460	0.0040 - 0.0119	507	0.0040 - 0.0119	507	2.69	0.01	2.63 to 2.75
Schedule (ii)	Copenhagen Long Cut	0.0004 - 0.0013	4356	0.0004 - 0.0013	3889	0.0004 - 0.0013	3813	3.60	0.02	3.53 to 3.68
Schedule (ii)	Fresh Strips	0.0089 - 0.0267	180	0.0089 - 0.0267	196	0.0089 - 0.0267	202	2.28	0.02	2.22 to 2.35
Schedule (ii)	2S3	0.0004 - 0.0013	4370	0.0004 - 0.0013	4953	0.0004 - 0.0013	5357	3.69	0.03	3.58 to 3.80

		Replicate Slopes [(#SCE/cell)/('Unit of Use'/mL)]								
Treatment	Sample	Replicate 1		Replicate 2		Replicate 3		Log[Slope] Statistics		
Schedule	Description	'Unit' Dose (unit/mL)	slope	'Unit' Dose (unit/mL)	slope	'Unit' Dose (unit/mL)	slope	Mean	Std. Err.	95% C.I.
Schedule (ii)	Camel SNUS Frost	0.0019 - 0.0056	909	0.0019 - 0.0056	1019	0.0019 - 0.0056	992	2.99	0.01	2.92 to 3.05
Schedule (ii)	Mellow Sticks	0.0022 - 0.0065	858	0.0022 - 0.0065	1006	0.0022 - 0.0065	782	2.94	0.03	2.81 to 3.08
Schedule (ii)	Fresh Orbs	0.0049 - 0.0148	452	0.0049 - 0.0148	390	0.0049 - 0.0148	409	2.62	0.02	2.54 to 2.70
Schedule (ii)	KR 2R4F	0.0089 - 0.0267	493	0.0094 - 0.0283	468	0.0094 - 0.0283	492	2.69	0.01	2.65 to 2.72

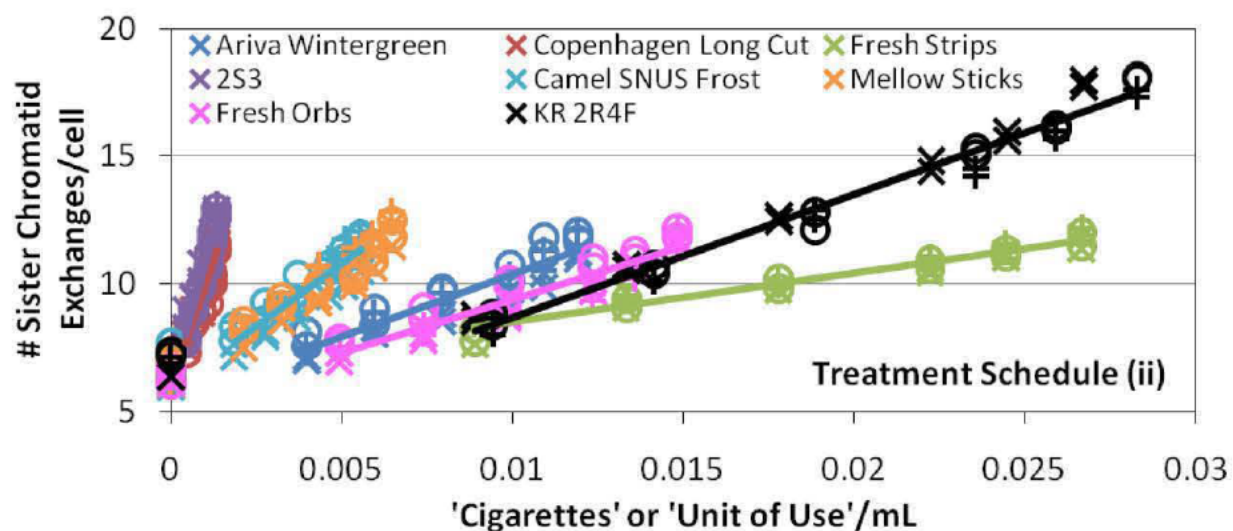
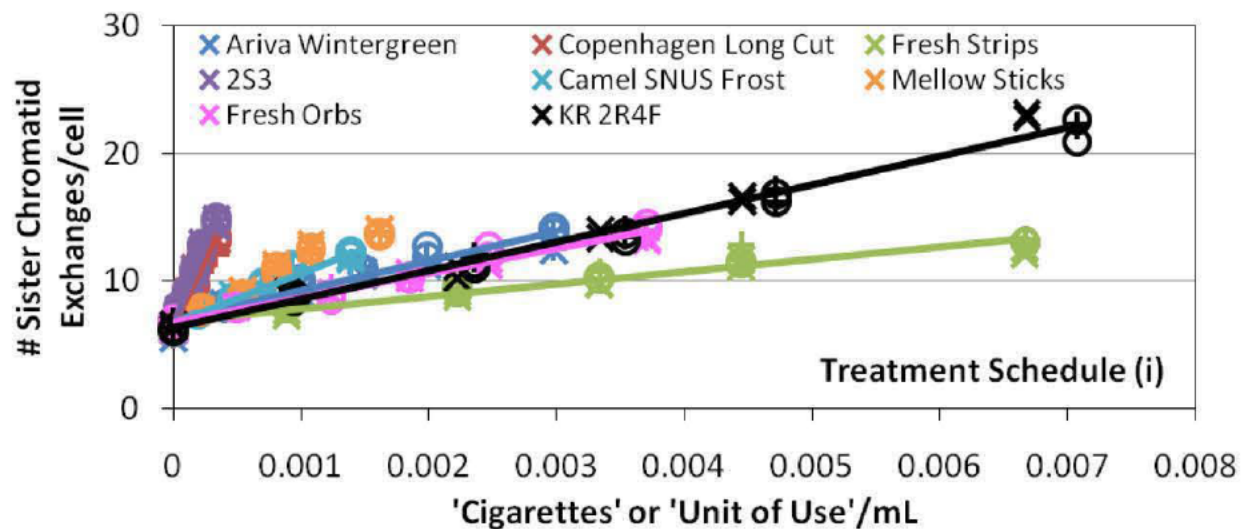
## 6.5.2 Data Plots

Plots of all replicate smoked and smokeless tobacco test samples expressed on a 'Nicotine' dose basis can be found in the file *M125\_sce\_tpm+wt\_stats\_Nicotine.xls* and plots of all replicate smoked and smokeless tobacco test samples expressed on a 'Unit of Use' dose basis can be found in the file *M125\_sce\_tpm+wt\_stats\_Unit.xls* on the CD that accompanies this report. Box-and-Whisker plots of the calculated specific activities can also be found on the CD that accompanies this report.

### 6.5.2.1 (# SCE/cell) vs. [µg 'Nicotine'/mL]



6.5.2.2 (# SCE/cell) vs. ['Unit of Use'/mL]



### 6.5.3 One-Way ANOVA Results

One-way ANOVA comparisons of mean 'nicotine in TPM' and 'nicotine in extracted smokeless tobacco', as well as mean 'cigarettes' and 'unit of use', log-transformed slope estimates among one smoked and 7 smokeless tobacco test sample yielded the following:

#### 6.5.3.1 Log-Transformed (# SCE/cell)/(µg 'Nicotine'/mL)

Treatment Schedule	Variation Source	Sum of Squares	d.f.	Mean Square	F Ratio	P value
Treatment Schedule (i)	Among Samples	2.2928	7	0.3275	48.67	< 0.001
	Within Samples	0.1077	16	0.0067		
	Total	2.4005	23			
Treatment Schedule (ii)	Among Samples	2.2249	7	0.3178	33.96	< 0.001
	Within Samples	0.1497	16	0.0094		
	Total	2.3747	23			

One-way ANOVA analysis indicates significant differences, at  $\alpha = 0.05$ , among mean 'Nicotine' log-transformed slope estimates for smoked and smokeless tobacco samples assayed under both treatment schedules (i) and (ii).

#### 6.5.3.2 Log-Transformed (# SCE/cell)/('Unit of Use'/mL)

Treatment Schedule	Variation Source	Sum of Squares	d.f.	Mean Square	F Ratio	P value
Treatment Schedule (i)	Among Samples	5.2375	7	0.7482	1652.39	< 0.001
	Within Samples	0.0072	16	0.0005		
	Total	5.2448	23			
Treatment Schedule (ii)	Among Samples	4.9855	7	0.7122	614.93	< 0.001
	Within Samples	0.0185	16	0.0012		
	Total	5.0040	23			

One-way ANOVA analysis indicates significant differences, at  $\alpha = 0.05$ , among mean 'unit of use' log-transformed slope estimates for smoked and smokeless tobacco samples assayed under both treatment schedules (i) and (ii).

### 6.5.4 Contrasts of Interest

(b) (4)

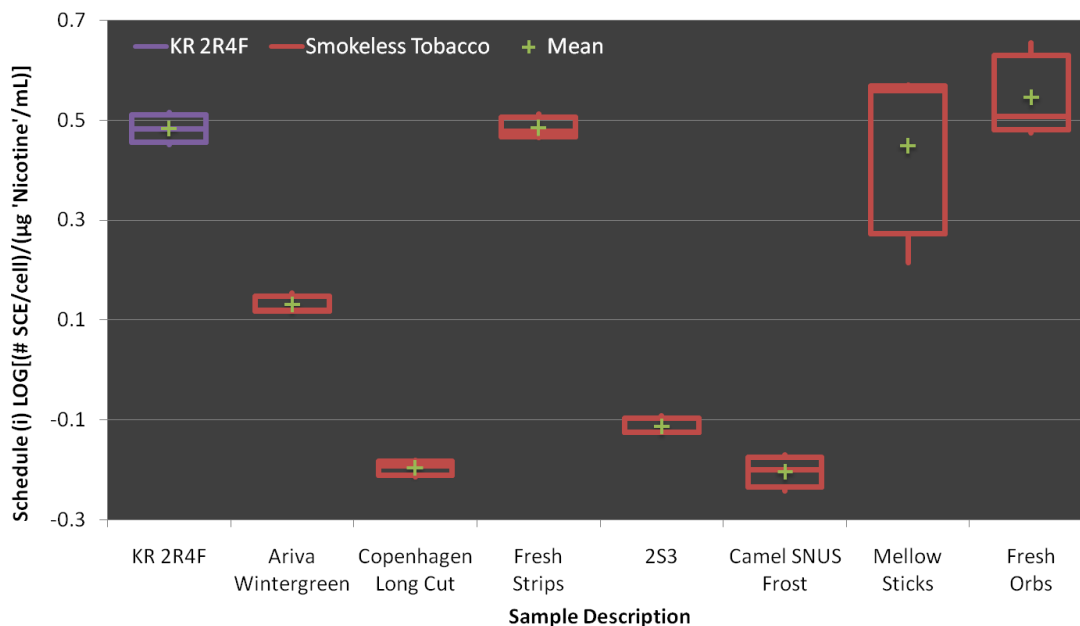
The tables below show ANOVA-based comparison results for both treatment schedules along with identified significant differences.

#### 6.5.4.1 (# SCE/cell) / ( $\mu\text{g}$ 'Nicotine'/mL)

	Treatment Schedule (i)			Treatment Schedule (ii)		
ANOVA-Based Comparison	f-ratio	p-value	significance at $\alpha = 0.05$	f-ratio	p-value	significance at $\alpha = 0.05$
Ariva Wintergreen vs. KR 2R4F	27.70	0.0001	significant	21.37	0.0003	significant
Copenhagen Long Cut vs. KR 2R4F	102.58	0.0000	significant	84.88	0.0000	significant
Fresh Strips vs. KR 2R4F	0.00	0.9786	not significant	0.22	0.6469	not significant
2S3 vs. KR 2R4F	79.15	0.0000	significant	66.66	0.0000	significant
Camel SNUS Frost vs. KR 2R4F	105.07	0.0000	significant	63.94	0.0000	significant
Mellow Sticks vs. KR 2R4F	0.26	0.6142	not significant	1.62	0.2208	not significant
Fresh Orbs vs. KR 2R4F	0.87	0.3649	not significant	0.51	0.4864	not significant

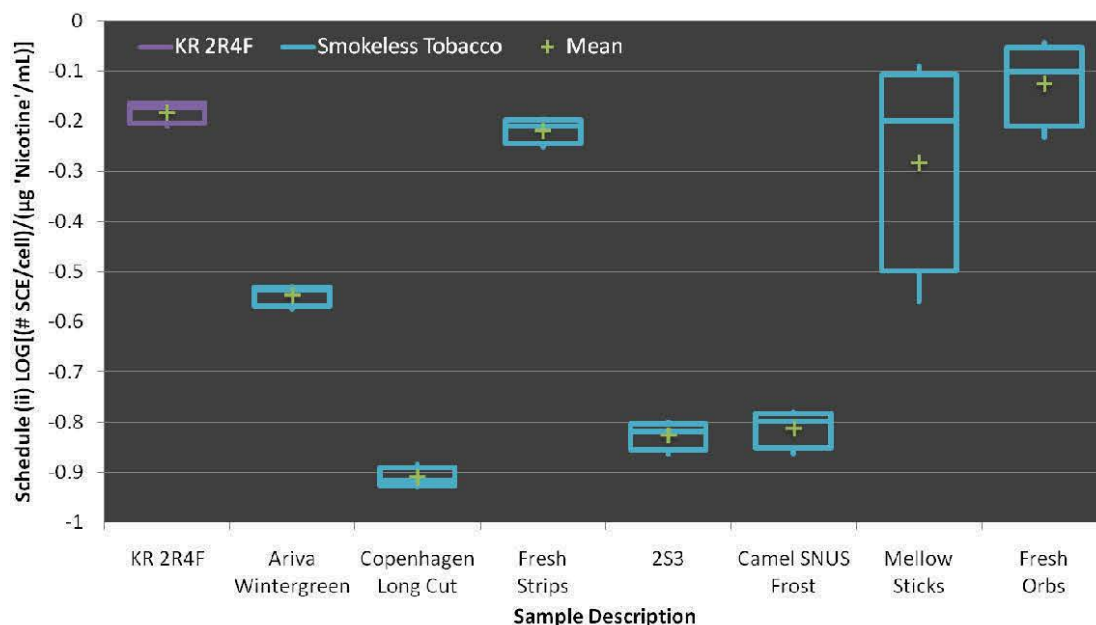
#### ANOVA-Based Comparison Results: Treatment Schedule (i)

Under treatment schedule (i), ANOVA-based comparison p-values less than the Bonferroni-adjusted  $\alpha = 0.05$  indicate that significant differences in mean log-transformed specific activity slope were detected between the TPM of **KR 2R4F** and the following smokeless tobacco extracts on a 'Nicotine' dose basis: **{Ariva Wintergreen, Copenhagen Long Cut, 2S3, Camel SNUS Frost}**.



### ANOVA-Based Comparison Results: Treatment Schedule (ii)

Under treatment schedule (ii), significant differences in mean log-transformed specific activity slope between the TPM of **KR 2R4F** and the smokeless tobacco extracts on a 'nicotine' dose basis were exactly the same as were seen under treatment schedule (i) above.

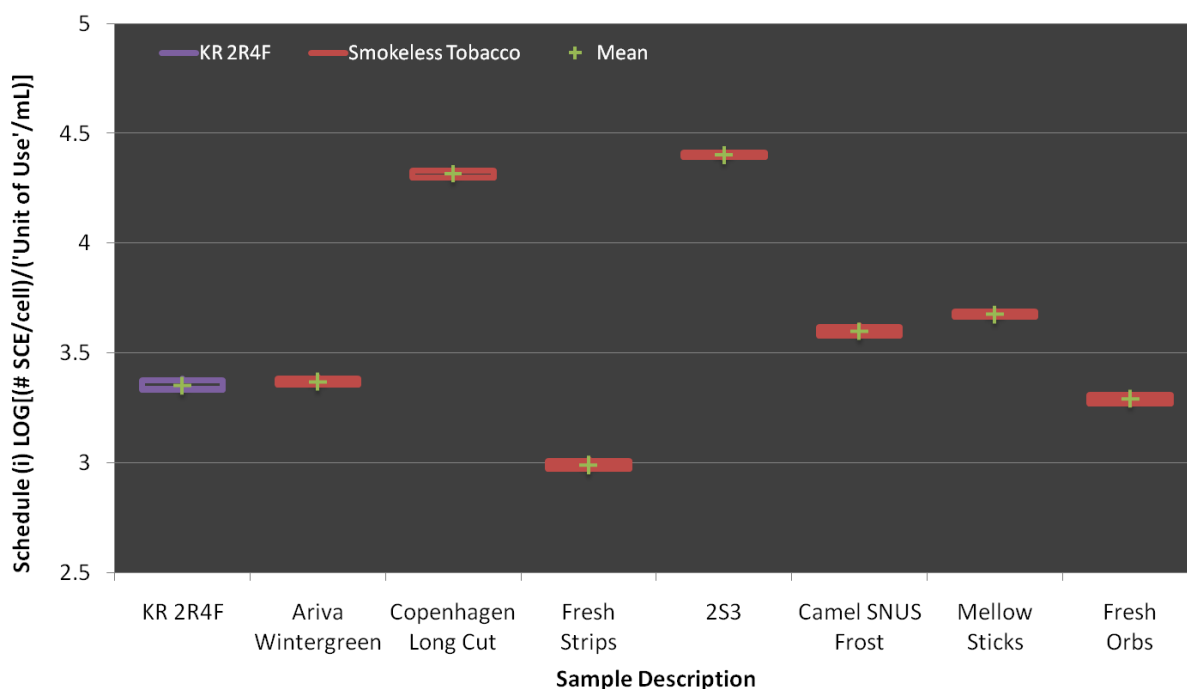


## 6.5.4.2 (# SCE/cell) / ('Unit of Use'/mL)

	Treatment Schedule (i)			Treatment Schedule (ii)		
ANOVA-Based Comparison	f-ratio	p-value	significance at $\alpha = 0.05$	f-ratio	p-value	significance at $\alpha = 0.05$
Ariva Wintergreen vs. KR 2R4F	1.14	0.3009	not significant	0.05	0.8326	not significant
Copenhagen Long Cut vs. KR 2R4F	3102	9.5E-20	significant	1092	3.7E-16	significant
Fresh Strips vs. KR 2R4F	434	5.1E-13	significant	208	1.4E-10	significant
2S3 vs. KR 2R4F	3666	2.5E-20	significant	1303	9.3E-17	significant
Camel SNUS Frost vs. KR 2R4F	203	1.6E-10	significant	119	8.2E-09	significant
Mellow Sticks vs. KR 2R4F	348	2.8E-12	significant	86.2	7.6E-08	significant
Fresh Orbs vs. KR 2R4F	11.72	0.0035	significant	5.59	0.0311	not significant

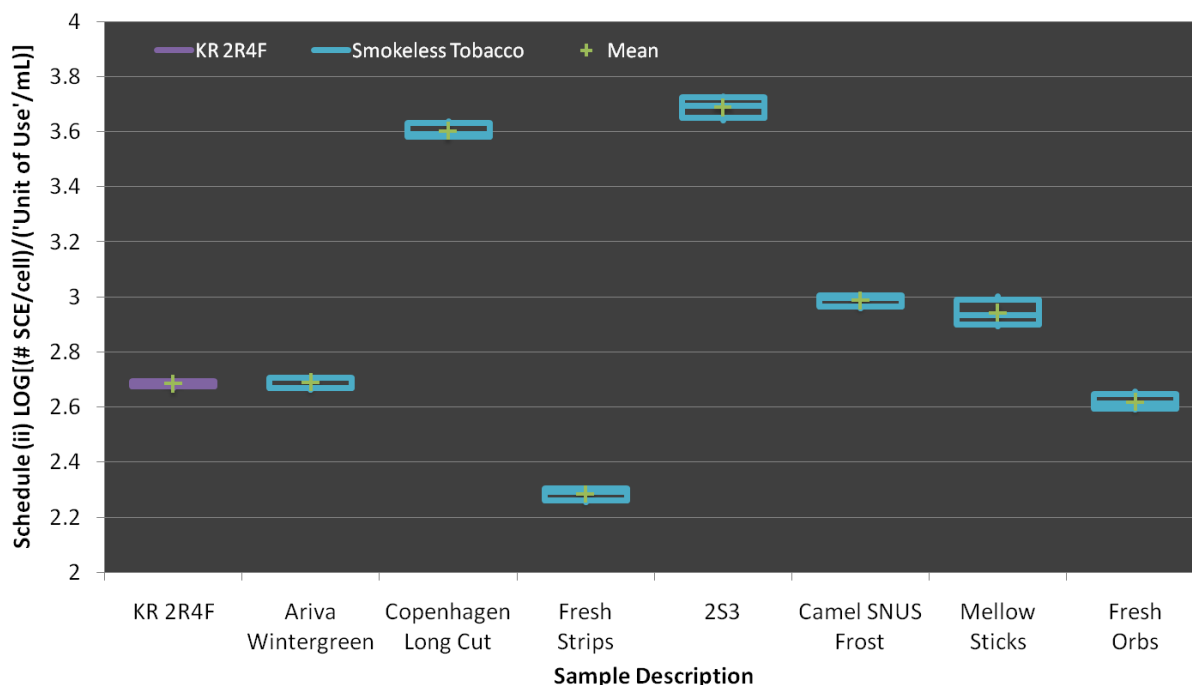
## ANOVA-Based Comparison Results: Treatment Schedule (i)

Under treatment schedule (i), ANOVA-based comparison p-values less than the Bonferroni-adjusted  $\alpha = 0.05$  indicate that significant differences in mean log-transformed specific activity slope were detected between the TPM of **KR 2R4F** and the following smokeless tobacco extracts on a 'unit of use' dose basis: **KR 2R4F > {Fresh Strips, Fresh Orbs}** and **KR 2R4F < {Copenhagen Long Cut, 2S3, Camel SNUS Frost, Mellow Sticks}**.



## ANOVA-Based Comparison Results: Treatment Schedule (ii)

Under treatment schedule (ii), ANOVA-based comparison p-values less than the Bonferroni-adjusted  $\alpha = 0.05$  indicate that significant differences in mean log-transformed specific activity slope were detected between the TPM of **KR 2R4F** and the following smokeless tobacco extracts on a 'unit of use' dose basis: **KR 2R4F > {Fresh Strips}** and **KR 2R4F < {Copenhagen Long Cut, 2S3, Camel SNUS Frost, Mellow Sticks}**.



## 7 Summary

Based on the results obtained in this study and the corresponding analysis of the toxicological data, the following summarizes the findings in regards to genotoxicity as measured with the *in vitro* sister chromatid exchange assay.

- The nicotine extraction efficiency for the 'Mellow Sticks' brand extracts was quite variable and thus may affect the comparison conclusions drawn on a 'nicotine' dose basis.
- On an 'extracted smokeless tobacco in DMSO'/mL dose basis, the Camel SNUS Frost brand was significantly lower in activity than that of any other test sample under treatment schedule (i).
- On an 'extracted moisture-corrected smokeless tobacco in DMSO'/mL dose basis, the 2S3 and Copenhagen Long Cut brands were significantly higher in activity than any other test sample. In addition, 2S3 had greater activity than Copenhagen Long Cut.
- On an 'extracted nicotine in smokeless tobacco/mL' dose basis, the trend in differences among test sample specific activities appears to be {Copenhagen Long Cut, 2S3, Camel SNUS Frost} < Ariva Wintergreen < {Fresh Strips, Mellow Sticks<sup>13</sup>, Fresh Orbs}.

<sup>13</sup> the nicotine extraction efficiency for the 3 replicate Mellow Sticks extracts was quite variable (see section 5.3 for further details), which may affect all slope comparison conclusions involving this brand on a nicotine dose basis.

- The TPM of 2R4F Kentucky Reference test samples on a nicotine dose basis were significantly more genotoxic than the extracts of smokeless tobacco test samples {Ariva Wintergreen, Copenhagen Long Cut, 2S3, Camel SNUS Frost}.
- On a 'unit of use' dose basis, many of the test brand were differentiable based on their genotoxicities. Specifically, under treatment schedule (i), all smokeless tobacco brands were differentiable from one another.

## 8 Attribution

### 8.1 Original

#### 8.1.1 Technical Director (Toxicology)

This report has been reviewed by me and is certified, to the best of my knowledge, to be a true and accurate description of the procedures, protocols and test methods used to arrive at the data and/or findings that accompany this report.

Dated: April 21, 2010



Amit Trivedi, Ph.D.,  
Technical Director (Toxicology)  
Labstat International ULC

#### 8.1.2 Senior Statistician

This report has been prepared by me and is certified, to the best of my knowledge, to be a true and accurate description of the statistical methods used to arrive at the findings that accompany this report.

Dated: April 21, 2010



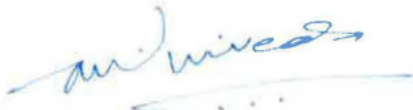
Wendy Wagstaff  
Senior Statistician  
Labstat International ULC

## 8.2 Revision 1

### 8.2.1 Technical Director (Toxicology)

This report has been reviewed by me and is certified, to the best of my knowledge, to be a true and accurate description of the procedures, protocols and test methods used to arrive at the data and/or findings that accompany this report.

Dated: December 22, 2010



Amit Trivedi, Ph.D.,  
Technical Director (Toxicology)  
Labstat International ULC

### 8.2.2 Senior Statistician

This report has been prepared by me and is certified, to the best of my knowledge, to be a true and accurate description of the statistical methods used to arrive at the findings that accompany this report.

Dated: December 22, 2010



Wendy Wagstaff  
Senior Statistician  
Labstat International ULC

# **Appendix A**

## **Scope of Accreditation**



Standards Council of Canada  
Conseil canadien des normes

200-270, rue Albert St.  
Ottawa, ON (Canada)  
K1P 6N7

Canada

Tel.: +1 613 238 3222

Fax: +1 613 569 7808

E-mail/Courriel: info@scc.ca

Internet: <http://www.scc.ca>

## SCOPE OF ACCREDITATION

LABSTAT INTERNATIONAL ULC  
262 Manitou Drive, Unit 5  
Kitchener, ON  
N2C 1L3

Accredited Laboratory No. 368  
(Conforms with requirements of CAN-P-4E (ISO/IEC 17025:2005))

CONTACT: Mr. Lucian Hirtie  
TEL: (519) 748-5409  
FAX: (519) 748-1654  
EMAIL: [lhirtie@labstat.com](mailto:lhirtie@labstat.com)

CLIENTS SERVED: All interested parties

FIELDS OF TESTING: Biological, Chemical/Physical

ISSUED ON: 2008-10-06

VALID TO: 2012-01-22

**Remarque:** La présente portée d'accréditation existe également en français, sous la forme d'un document distinct.

**Note:** This scope of accreditation is also available in French as a separately issued document.

### ANIMAL AND PLANTS (AGRICULTURE)

#### Agricultural products: (except food and chemicals)

##### **Tobacco**

AOAC 966.02	Moisture in Tobacco
ASTM E2187	Standard Test Method for Measuring the Ignition Strength of Cigarettes
ISO 10315	Cigarettes – Determination of Nicotine in Smoke Condensates Gas-Chromatographic Method
ISO 10362-1	Cigarettes – Determination of Water in Smoke Condensates – Part 1:

The approved and most recent version of this document can be viewed on the SCC website at <http://palcan.scc.ca/SpecsSearch/GLSearchForm.do>

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Standards Council of Canada Accredited Laboratory No. 368

	Gas-Chromatographic Method
ISO 15592-2	Fine-cut Tobacco and smoking articles made from it – Methods of sampling, conditioning and analysis – Part 2: Atmosphere for conditioning and testing
ISO 15592-3	Fine-cut Tobacco and smoking articles made from it – Methods of sampling, conditioning and analysis – Part 3: Determination of total particulate matter of smoking articles using a routine analytical smoking machine, preparation for the determination of water and nicotine, and calculation of nicotine-free dry particulate matter
ISO 3308	Routine Analytical Cigarette-Smoking Machine– Definitions and Standard Conditions
ISO 3402	Tobacco and Tobacco Products – Atmosphere for Conditioning and Testing
ISO 4387	Cigarettes – Determination of Total and Nicotine-Free Dry Particulate Matter Using a Routine Analytical Smoking Machine
ISO 6565	Tobacco and Tobacco Products – Draw Resistance of Cigarettes and Pressure Drop of Filter Rods–Standard Conditions and Measurement
ISO 8454	Cigarettes – Determination of Carbon Monoxide in the Vapour Phase of Cigarette Smoke – NDIR method
TMS-118	Determination of Volatile Nitrosamines in Mainstream Tobacco Smoke
TMS-120	Determination of Selected Polynuclear Aromatic Hydrocarbons (PAHs) in Mainstream Tobacco Smoke
TMS-124	Determination of Vinyl Chloride, 1,3-Butadiene, Isoprene, Acrylonitrile, Benzene, Toluene, Styrene and Acetamide in Mainstream Tobacco Smoke (Expanded List)
TMS-127	Determination of Selected Polynuclear Aromatic Hydrocarbons (PAHs) And Aza-Arenes in the Particulate Phase of Mainstream Tobacco Smoke
TMS-128	Determination of Aromatic Amines in Mainstream Tobacco smoke (Expanded list: Aniline, o-Toluidine, m-Toluidine, p-Toluidine, o-Anisidine, 1- and 2-Aminonaphthalene and 3- and 4-Aminobiphenyl)
TMS-132	Determination of Gas Phase and Particulate Phase Free Radicals in Mainstream Tobacco Smoke
TMS-133	Determination of Selected Heterocyclic Aromatic Amines (HAAs) in Mainstream Tobacco Smoke
TMS-135	Determination of Tobacco Specific Nitrosamines in Mainstream Tobacco Smoke by Liquid Chromatography–Tandem Mass Spectrometry
TMS-137	Determination of Acetamide and Acrylamide in Mainstream Tobacco Smoke
TSS-219	Determination of Selected Polynuclear Aromatic Hydrocarbons (PAHs) in Sidestream Tobacco Smoke
TSS-222	Determination of Sidestream Tobacco Smoke pH
TWT-303	Determination of Carbonyls in Tobacco Samples
TWT-320	Determination of 1- and 2- Aminonaphthalene and 3- and 4-Aminobiphenyl in Tobacco Samples
TWT-321	

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	Determination Of Nicotine Alkaloids And Reducing Sugars In Tobacco Samples
TWT-324	Determination of Nicotine in Tobacco Samples (CDC method)
TWT-332	Determination of Volatile Nitrosamines in Tobacco Samples
TWT-333	Determination of Tobacco Specific Nitrosamines in Tobacco Samples by Liquid Chromatography–Tandem Mass Spectrometry
TWT-334	Determination of Chloride in Tobacco Samples
TWT-335	Determination of Selected Polycyclic Aromatic Hydrocarbons (PAHs) in Tobacco Samples
TWT-336	Determination of Acrylamide in Tobacco Samples by Liquid Chromatography – Tandem Mass Spectrometry
TWT-337	Determination of 1,3-Butadiene and Benzene in Tobacco Samples

**(Health Canada Tobacco Reporting Regulations Official Methods)**

T-101	Determination of Ammonia in Mainstream Tobacco Smoke
T-102	Determination of 1- and 2- Aminonaphthalene and 3- and 4- Aminobiphenyl in Mainstream Tobacco Smoke
T-103	Determination of Benzo[a]pyrene in Mainstream Tobacco Smoke
T-104	Determination of Selected Carbonyls in Mainstream Tobacco Smoke
T-105	Determination of Eugenol in Mainstream Tobacco Smoke
T-106	Determination of Filter Efficiency in Mainstream Tobacco Smoke
T-107	Determination of Hydrogen Cyanide in Mainstream Tobacco Smoke
T-108	Determination of Mercury in Mainstream Tobacco Smoke
T-109	Determination of Ni, Pb, Cd, Cr, As and Se in Mainstream Tobacco Smoke
T-110	Determination of Oxides of Nitrogen in Mainstream Tobacco Smoke
T-111	Determination of Nitrosamines in Mainstream Tobacco Smoke
T-112	Determination of Pyridine, Quinoline and Styrene in Mainstream Tobacco Smoke
T-113	Determination of Mainstream Tobacco Smoke pH
T-114	Determination of Phenolic Compounds in Mainstream Tobacco Smoke
T-115	Determination of Tar, Nicotine and Carbon Monoxide in Mainstream Tobacco Smoke
T-116	Determination of 1,3- Butadiene, Isoprene, Acrylonitrile, Benzene and Toluene in Mainstream Tobacco Smoke
T-201	Determination of Ammonia in Sidestream Tobacco Smoke
T-202	Determination of 1- and 2- Aminonaphthalene and 3- and 4- Aminobiphenyl in Sidestream Tobacco Smoke
T-203	Determination of Benzo[a]pyrene in Sidestream Tobacco Smoke
T-203A	Determination of Benzo[a]pyrene in Sidestream Tobacco Smoke (GC/MS)
T-204	Determination of Selected Carbonyls in Sidestream Tobacco Smoke
T-205	Determination of Hydrogen Cyanide in Sidestream Tobacco Smoke
T-206	Determination of Mercury in Sidestream Tobacco Smoke
T-207	Determination of Toxic Trace Metals in Sidestream Smoke

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T-208	Determination of Oxides of Nitrogen in Sidestream Tobacco Smoke
T-209	Determination of Nitrosamines in Sidestream Tobacco Smoke
T-210	Determination of Pyridine and Quinoline in Sidestream Tobacco Smoke
T-211	Determination of Phenolic Compounds in Sidestream Tobacco Smoke
T-212	Determination of "Tar" and Nicotine in Sidestream Tobacco Smoke
T-213	Determination of 1,3 Butadiene, Isoprene, Acrylonitrile, Benzene, Toluene and Styrene in Sidestream Tobacco Smoke
T-214	Determination of Carbon Monoxide (CO) in Sidestream Tobacco Smoke
T-301	Determination of Alkaloids in Whole Tobacco
T-302	Determination of Ammonia in Whole Tobacco
T-304	Determination of Humectants in Whole Tobacco
T-306	Determination of Ni, Pb, Cd, Cr, As, Se and Hg in Whole Tobacco
T-307	Determination of Benzo[a]pyrene in Whole Tobacco
T-308	Determination of Nitrate from Whole Tobacco
T-309	Determination of Nitrosamines in Whole Tobacco
T-310	Determination of Whole Tobacco pH
T-311	Determination of Triacetin in Whole Tobacco
T-312	Determination of Sodium Propionate in Whole Tobacco
T-313	Determination of Sorbic Acid in Whole Tobacco
T-314	Determination of Eugenol in Whole Tobacco
T-401	Preparation of Cigarettes from Packaged Leaf Tobacco for Testing
T-402	Preparation of Cigarettes, Cigarette Tobacco, Cigars, Kreteks, Bidis, Packaged Leaf Tobacco, Pipe Tobacco and Smokeless Tobacco for testing

**(Microbiology Tests)**

T-501	Bacterial Reverse Mutation Assay for Mainstream Tobacco Smoke
T-502	Neutral Red Uptake Assay for Mainstream Tobacco Smoke
T-503	In Vitro Micronucleus Assay for Mainstream Tobacco Smoke
TBA-504	<i>In vitro</i> Sister Chromatid Exchange (SCE) Assay for Mainstream Tobacco Smoke

**(Other: Measures of Exposure)**

TME-001	Determination of Nicotine, Cotinine and Caffeine in Physiological Fluid Samples
TME-002	Determination of Creatinine in Urine
TME-003	Determination of 3-Hydroxycotinine in Physiological Fluid Samples
TME-004	<i>Salmonella Typhimurium</i> Reverse Mutation Assay: Microsuspension Method For Testing Urine Mutagenicity
TME-005	Determination of Nicotine and its Major Metabolites in Urine by Liquid Chromatography – Tandem Mass Spectrometry

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TME-006	Determination of S-Phenylmercapturic Acid (S-PMA) in Urine by Liquid Chromatography – Tandem Mass Spectrometry
TME-007	Determination of 8-Hydroxy-2'-Deoxyguanosine (8-OHdG) in Urine by Liquid Chromatography – Tandem Mass Spectrometry
TME-008	Determination of 1-Hydroxypyrene (1-HOP) in Urine by Liquid Chromatography – Tandem Mass Spectrometry
TME-009	Determination of 4-(Methyl-Nitrosamino)-1-(3-Pyridyl)-1-Butanol (NNAL) and its Glucuronides in Urine by Liquid Chromatography – Tandem Mass Spectrometry
TME-010	Determination of 1,3-Butadiene Urinary Metabolites by Liquid Chromatography – Tandem Mass Spectrometry
TME-011	Determination of 3-Hydroxypropylmercapturic Acid (3-HPMA) in Urine by Liquid Chromatography – Tandem Mass Spectrometry
TME-012	Determination of Selected Arylamines in Urine by Gas Chromatography – Mass Spectrometry (GC-MS)

**Notes:**

**AOAC:** Association of Official Analytical Chemists

**ASTM:** American Society for Testing and Materials

**CAN-P-4E (ISO/IEC 17025):** General Requirements for the Competence of Testing and Calibration Laboratories (ISO/IEC 17025-2005)

**CDC:** Centers for Disease Control and Prevention

**ISO:** International Organization for Standardization

**T:** Health Canada Tobacco Reporting Regulations Official Methods

**TBA:** Test Method, Biological Activity

**TME:** Test Method, Measures of Exposure

**TMS:** Test method, Mainstream Smoke

**TSS:** Test method, Sidestream Smoke

**TWT:** Test method, Whole Tobacco

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P. Paladino, P. Eng., Director, Conformity Assessment

Date: 2008-10-06

Number of Scope Listings: 93  
SCC 1003-15/420

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# **Appendix B**

## **“Raw” Data and Analysis Results (See Enclosed CD)**

## Use of Labstat's<sup>1</sup> Analytical Reports<sup>2</sup>

Labstat International ULC is a recognized centre of analytical excellence related to tobacco and tobacco products. Our clients include major international tobacco manufacturers, various Governments and Government agencies such as the Canadian Federal Department of Health and the Massachusetts Department of Public Health, agricultural interests, university researchers and private research interests. Normally our contractual obligations extend **only** to the provision of data and related reports.

It should be noted<sup>3</sup>, in this regard, that

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The following also applies to reported data.

***All Labstat reports on testing relate only to the sample received and tested by it at the time of testing. Labstat warrants that all samples submitted were tested in accordance with its standard test procedures. Except as stated herein, there is no warranty expressed or implied, statutory or other wise, as to the results of Labstat tests. Labstat does not warrant or guarantee the fitness of the materials from which the samples have been drawn for any particular purpose including without limitation for consumption as cigarettes, cigars, smokeless tobacco or any other form of tobacco or tobacco-related product.***

<sup>1</sup>. Labstat International ULC,  
262 Manitou Drive, Kitchener, ON Canada N2C 1L3  
Phone: (519) 748-5409; Fax: (519) 748-1654; Email: labstat@labstat.com

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<sup>3</sup>. Unless superseded by a specific contractual obligation or other written agreement.

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Sample ID	Sample Description
1002241	Ariva Wintergreen
1002242	Copenhagen Long Cut
1002243	Fresh Strips
1002244	2S3 Research Moist Smokeless Tobacco
1002245	Camel SNUS Frost
1002246	Mellow Sticks
1002247	Fresh Orbs

Sample Type	Sample ID	Nicotine in DMSO Extract [mg/mL]				Calculated Nicotine in Tobacco [mg/g]				pH of DMSO Extract			
		Average	St Dev	L. Limit (95%)	U. Limit (95%)	Average	St Dev	L. Limit (95%)	U. Limit (95%)	Average	St Dev	L. Limit (95%)	U. Limit (95%)
DMSO Extract	1002241	0.687	0.006	0.672	0.702	6.18	0.05	6.05	6.31	6.37	0.04	6.27	6.48
DMSO Extract	1002242	1.45	0.03	1.37	1.53	13.0	0.3	12.3	13.7	5.59	0.03	5.51	5.67
DMSO Extract	1002243	0.283	0.002	0.279	0.287	2.55	0.01	2.51	2.59	6.03	0.08	5.84	6.22
DMSO Extract	1002244	1.46	0.04	1.35	1.56	13.1	0.4	12.1	14.1	5.72	0.07	5.56	5.89
DMSO Extract	1002245	1.17	0.05	1.06	1.29	10.6	0.4	9.5	11.6	6.33	0.04	6.25	6.42
DMSO Extract	1002246	0.390	0.191	0.000	0.865	3.51	1.72	0.00	7.78	5.57	0.05	5.45	5.69
DMSO Extract	1002247	0.278	0.053	0.147	0.410	2.50	0.48	1.32	3.69	6.30	0.07	6.12	6.47

**Glossary of Abbreviations**

L. Limit (95%): lower limit of the 95% confidence interval

U. Limit (95%): upper limit of the 95% confidence interval

**Nicotine Content of DMSO Extract of Tobacco Products**  
(per gram or mL 'As Received' Basis)

<b>Sample ID</b>	<b>Nicotine in [mg/ml]</b>	<b>Nicotine in Tobacco [mg/g]</b>
1002241	0.685	6.16
1002241	0.694	6.24
1002241	0.683	6.14
<b>Average</b>	0.687	6.18
<b>Std. Dev.</b>	0.006	0.05
<b>L. Limit (95%)</b>	0.672	6.05
<b>U. Limit (95%)</b>	0.702	6.31
1002242	1.49	13.4
1002242	1.43	12.8
1002242	1.44	12.9
<b>Average</b>	1.45	13.0
<b>Std. Dev.</b>	0.03	0.3
<b>L. Limit (95%)</b>	1.37	12.3
<b>U. Limit (95%)</b>	1.53	13.7
1002243	0.285	2.56
1002243	0.283	2.55
1002243	0.282	2.53
<b>Average</b>	0.283	2.55
<b>Std. Dev.</b>	0.002	0.01
<b>L. Limit (95%)</b>	0.279	2.51
<b>U. Limit (95%)</b>	0.287	2.59
1002244	1.42	12.7
1002244	1.45	13.1
1002244	1.50	13.5
<b>Average</b>	1.46	13.1
<b>Std. Dev.</b>	0.04	0.4
<b>L. Limit (95%)</b>	1.35	12.1
<b>U. Limit (95%)</b>	1.56	14.1
1002245	1.23	11.0
1002245	1.14	10.2
1002245	1.16	10.4
<b>Average</b>	1.17	10.6
<b>Std. Dev.</b>	0.05	0.4
<b>L. Limit (95%)</b>	1.06	9.5
<b>U. Limit (95%)</b>	1.29	11.6

**Nicotine Content of DMSO Extract of Tobacco Products  
(per gram or mL 'As Received' Basis)**

<b>Sample ID</b>	<b>Nicotine in [mg/mL]</b>	<b>Nicotine in Tobacco [mg/g]</b>
1002246	0.292	2.63
1002246	0.267	2.40
1002246	0.610	5.49
<b>Average</b>	0.390	3.51
<b>Std. Dev.</b>	0.191	1.72
<b>L. Limit (95%)</b>	0.000	0.00
<b>U. Limit (95%)</b>	0.865	7.78
1002247	0.282	2.54
1002247	0.329	2.96
1002247	0.223	2.01
<b>Average</b>	0.278	2.50
<b>Std. Dev.</b>	0.053	0.48
<b>L. Limit (95%)</b>	0.147	1.32
<b>U. Limit (95%)</b>	0.410	3.69

**Table 12: pH of Processed Tobacco  
('As Received' Basis)**

<b>Sample ID</b>	<b>pH Result</b>
1002241	6.39
1002241	6.33
1002241	6.41
<b>Average</b>	6.37
<b>Std. Dev.</b>	0.04
<b>L. Limit (95%)</b>	6.27
<b>U. Limit (95%)</b>	6.48
1002242	5.61
1002242	5.61
1002242	5.56
<b>Average</b>	5.59
<b>Std. Dev.</b>	0.03
<b>L. Limit (95%)</b>	5.51
<b>U. Limit (95%)</b>	5.67
1002243	6.12
1002243	5.97
1002243	6.01
<b>Average</b>	6.03
<b>Std. Dev.</b>	0.08
<b>L. Limit (95%)</b>	5.84
<b>U. Limit (95%)</b>	6.22
1002244	5.65
1002244	5.76
1002244	5.77
<b>Average</b>	5.72
<b>Std. Dev.</b>	0.07
<b>L. Limit (95%)</b>	5.56
<b>U. Limit (95%)</b>	5.89
1002245	6.37
1002245	6.34
1002245	6.30
<b>Average</b>	6.33
<b>Std. Dev.</b>	0.04
<b>L. Limit (95%)</b>	6.25
<b>U. Limit (95%)</b>	6.42

**Table 12:      pH of Processed Tobacco  
                 ('As Received' Basis)**

<b>Sample ID</b>	<b>pH Result</b>
1002246	5.57
1002246	5.53
1002246	5.63
<b>Average</b>	5.57
<b>Std. Dev.</b>	0.05
<b>L. Limit (95%)</b>	5.45
<b>U. Limit (95%)</b>	5.69
1002247	6.22
1002247	6.31
1002247	6.36
<b>Average</b>	6.30
<b>Std. Dev.</b>	0.07
<b>L. Limit (95%)</b>	6.12
<b>U. Limit (95%)</b>	6.47

Matrix Code		MS	MS	MS	MS
Sample ID		1002248	1002248	1002248	1002248
Condition		S	S	S	S
Unit		Average	Std. Dev.	L. Limit (95%)	U. Limit (95%)
Smoke Constituent					
<b>Tar, Nicotine, Menthol and Humectants</b>					
Puff Count	[per cig]	9.1	0.2	8.5	9.7
Tar	[mg/cig]	8.79	0.50	7.54	10.04
Nicotine	[mg/cig]	0.737	0.022	0.682	0.792
Propylene Glycol	[mg/cig]	NQ	NQ	N/A	N/A
Menthol	[mg/cig]	BDL	BDL	N/A	N/A
Glycerol	[mg/cig]	0.730	0.022	0.675	0.784

**Glossary of Abbreviations****Condition:****S:** puff volume, 35mL; interval, 60 sec; duration, 2 sec; vent blocking, none.**BDL:** Below the Limit of Detection**NQ:** Below the Limit of Quantification**N/A:** Not Applicable**L. Limit (95%):** lower limit of the 95% confidence interval**U. Limit (95%):** upper limit of the 95% confidence interval



**Limits of Detection (LOD) and Limits of Quantification (LOQ) Determined for  
Selected Mainstream Constituents of Tobacco Smoke**

Health Canada Method	Analyte	Units	Mainstream ('FTC')	
			LOD	LOQ
T-501	tar	mg/cig	0.071	0.237
T-501	nicotine	mg/cig	0.001	0.004
T-501	water	mg/cig	0.038	0.128
T-501	TPM	mg/cig	0.060	0.200
T-501	Propylene Glycol	mg/cig	0.002	0.008
T-501	Menthol	mg/cig	0.002	0.008
T-501	Glycerol	mg/cig	0.056	0.188

Abbreviations: N/A, not applicable

For further information regarding the terms 'ISO' and 'Intense', please refer to Health Canada's website at: [www.hc-sc.gc.ca/hl-vs/tobac-tabac/legislation/reg/indust/constitu\\_e.html](http://www.hc-sc.gc.ca/hl-vs/tobac-tabac/legislation/reg/indust/constitu_e.html).

**LOD Definition:** The limit of detection (LOD) for a particular analyte is a statistically defined decision point that, with a specified probability, measured results falling at or above this point are interpreted to indicate an analyte concentration greater than zero within the sample.

**LOQ Definition:** The limit of quantification for a particular analyte is another statistically defined decision point that results falling at or above this point can be assigned a statistically significant numerical value with an associated level of precision. Values falling between the LOD and LOQ are interpreted as a positive but not quantifiable result for the analyte in question.

**Yields of TPM, Water, Nicotine, 'Tar', Menthol and Humectants in Mainstream Tobacco Smoke:  
'FTC' Conditions\***

Set Number	Run Number	Sample ID	Weight [mg/cig]	Puff Count [per cig]	MS TPM [mg/cig]	Water [mg/cig]	Nicotine [mg/cig]	Tar [mg/cig]	Propylene Glycol [mg/cig]	Menthol [mg/cig]	Glycerol [mg/cig]
1	2	1002248	1053	9.3	11.2	1.13	0.735	9.37	< 0.002	< 0.002	0.715
2	2	1002248	1058	8.8	10.6	1.40	0.760	8.45	< 0.008 but ≥ 0.002	< 0.002	0.755
3	2	1002248	1060	9.1	10.6	1.34	0.716	8.55	< 0.008 but ≥ 0.002	< 0.002	0.720
<b>Average</b>			1057	9.1	10.8	1.29	0.737	8.79	<b>NQ</b>	<b>BDL</b>	0.730
<b>Std. Dev.</b>			4	0.2	0.4	0.14	0.022	0.50	<b>NQ</b>	<b>BDL</b>	0.022
<b>L. Limit (95%)</b>			1048	8.5	9.9	0.93	0.682	7.54	N/A	N/A	0.675
<b>U. Limit (95%)</b>			1066	9.7	11.7	1.65	0.792	10.04	N/A	N/A	0.784

Glossary of Abbreviations

\* puff volume, 35mL; interval, 60 sec; duration, 2 sec; vent blocking, 0%. See text for additional details.

**BDL:** Below the Limit of Detection

**NQ:** Below the Limit of Quantification

**N/A:** Not Applicable

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Project: M125

Period: February 1 - 5, 2010

**Smoking Data<sup>†</sup> for *In Vitro* Sister Chromatid Exchange Assay****Nicotine Dose Data (µg/mL media) for *In Vitro* SCE Assay**

Set Number	Run Number	Sample ID	Replicate Number	Smoking Date	Cigarettes Smoked	Puff Count (per cig)	MS TPM (mg/cig) <sup>1</sup>	Nicotine (mg/cig)	Smoking Machine	Treatment Schedule (i)						Treatment Schedule (ii)						
										1	2	3	4	5	6	1	2	3	4	5	6	7
1	2	1002248	1	01-Feb-10	20	9.3	11.2	0.735	Borgwaldt Rotary	0	0.65	1.64	2.45	3.27	4.91	0	6.54	9.81	13.1	16.4	18.0	19.6
2	2	1002248	2	04-Feb-10	20	8.8	10.6	0.760	Borgwaldt Rotary	0	0.72	1.79	2.69	3.58	5.37	0	7.16	10.7	14.3	17.9	19.7	21.5
3	2	1002248	3	05-Feb-10	20	9.1	10.6	0.716	Borgwaldt Rotary	0	0.67	1.69	2.53	3.37	5.06	0	6.75	10.1	13.5	16.9	18.6	20.2

Treatment Schedule	TPM (µg/mL media)						
	1	2	3	4	5	6	7
Schedule (i)	0	10	25	37.5	50	75	
Schedule (ii)	0	100	150	200	250	275	300

<sup>†</sup> Samples generated under 'FTC' smoking conditions:

35mL puff volume; 60 second interval; 2 second duration; no vent blocking.

<sup>1</sup> Samples extracted in DMSO to give a final concentration of 10.0 mg/ml.

***In Vitro* Sister Chromatid Exchange Assay of CHO cells with (+) and without (-) S9 Metabolic Activation**  
(Observations per flask)

Set Number	Run Number	Sample ID	Replicate Number	Assay Date	Treatment Schedule	TPM (µg/mL)	Treatment Time (h)	Metabolic Activation	Cell Counts (Flask 1)			Cell Counts (Flask 2)			Sister Chromatid Exchanges per Cell/Chromosome					
									# of Cells	# of SCE	Number of chromosomes	# of Cells	# of SCE	Number of chromosomes	SCE per Cell			SCE per Chromosome		
															Flask 1	Flask 2	Average	Flask 1	Flask 2	Average
1	2	1002248	1	09-Mar-10	Schedule (i)	0	30	-S9	25	164	511	25	158	516	6.56	6.32	6.44	0.321	0.306	0.314
1	2	1002248	1	09-Mar-10	Schedule (i)	10	30	-S9	25	222	520	25	228	518	8.88	9.12	9.00	0.427	0.440	0.434
1	2	1002248	1	09-Mar-10	Schedule (i)	25	30	-S9	25	255	509	25	277	508	10.20	11.08	10.64	0.501	0.545	0.523
1	2	1002248	1	09-Mar-10	Schedule (i)	37.5	30	-S9	25	348	514	25	334	508	13.9	13.4	13.6	0.677	0.657	0.667
1	2	1002248	1	09-Mar-10	Schedule (i)	50	30	-S9	25	415	517	25	406	512	16.6	16.2	16.4	0.803	0.793	0.798
1	2	1002248	1	09-Mar-10	Schedule (i)	75	30	-S9	25	577	510	25	569	526	23.1	22.8	22.9	1.13	1.08	1.11
2	2	1002248	2	16-Mar-10	Schedule (i)	0	30	-S9	25	173	509	25	159	518	6.92	6.36	6.64	0.340	0.307	0.323
2	2	1002248	2	16-Mar-10	Schedule (i)	10	30	-S9	25	232	511	25	222	511	9.28	8.88	9.08	0.454	0.434	0.444
2	2	1002248	2	16-Mar-10	Schedule (i)	25	30	-S9	25	292	514	25	301	514	11.68	12.04	11.86	0.568	0.586	0.577
2	2	1002248	2	16-Mar-10	Schedule (i)	37.5	30	-S9	25	336	517	25	351	517	13.4	14.0	13.7	0.650	0.679	0.664
2	2	1002248	2	16-Mar-10	Schedule (i)	50	30	-S9	25	405	510	25	429	501	16.2	17.2	16.7	0.794	0.856	0.825
2	2	1002248	2	16-Mar-10	Schedule (i)	75	30	-S9	25	552	510	25	556	502	22.1	22.2	22.2	1.08	1.11	1.09
3	2	1002248	3	23-Mar-10	Schedule (i)	0	30	-S9	25	157	523	25	153	492	6.28	6.12	6.20	0.300	0.311	0.306
3	2	1002248	3	23-Mar-10	Schedule (i)	10	30	-S9	25	224	524	25	211	508	8.96	8.44	8.70	0.427	0.415	0.421
3	2	1002248	3	23-Mar-10	Schedule (i)	25	30	-S9	25	284	525	25	274	508	11.36	10.96	11.16	0.541	0.539	0.540
3	2	1002248	3	23-Mar-10	Schedule (i)	37.5	30	-S9	25	344	523	25	329	513	13.8	13.2	13.5	0.658	0.641	0.650
3	2	1002248	3	23-Mar-10	Schedule (i)	50	30	-S9	25	420	524	25	406	512	16.8	16.2	16.5	0.802	0.793	0.797
3	2	1002248	3	23-Mar-10	Schedule (i)	75	30	-S9	25	566	525	25	522	506	22.6	20.9	21.8	1.08	1.03	1.05
1	2	1002248	1	11-Mar-10	Schedule (ii)	0	3	+S9	25	159	516	25	159	497	6.36	6.36	6.36	0.308	0.320	0.314
1	2	1002248	1	11-Mar-10	Schedule (ii)	100	3	+S9	25	219	506	25	213	509	8.76	8.52	8.64	0.433	0.418	0.426
1	2	1002248	1	11-Mar-10	Schedule (ii)	150	3	+S9	25	268	514	25	263	507	10.7	10.5	10.6	0.521	0.519	0.520
1	2	1002248	1	11-Mar-10	Schedule (ii)	200	3	+S9	25	311	507	25	316	492	12.4	12.6	12.5	0.613	0.642	0.628
1	2	1002248	1	11-Mar-10	Schedule (ii)	250	3	+S9	25	360	510	25	370	500	14.4	14.8	14.6	0.706	0.740	0.723
1	2	1002248	1	11-Mar-10	Schedule (ii)	275	3	+S9	25	390	509	25	399	500	15.6	16.0	15.8	0.766	0.798	0.782
1	2	1002248	1	11-Mar-10	Schedule (ii)	300	3	+S9	25	443	522	25	449	493	17.7	18.0	17.8	0.849	0.911	0.880
2	2	1002248	2	18-Mar-10	Schedule (ii)	0	3	+S9	25	172	491	25	178	511	6.88	7.12	7.00	0.350	0.348	0.349
2	2	1002248	2	18-Mar-10	Schedule (ii)	100	3	+S9	25	200	503	25	216	511	8.00	8.64	8.32	0.398	0.423	0.410
2	2	1002248	2	18-Mar-10	Schedule (ii)	150	3	+S9	25	252	515	25	268	510	10.1	10.7	10.4	0.489	0.525	0.507
2	2	1002248	2	18-Mar-10	Schedule (ii)	200	3	+S9	25	322	508	25	313	507	12.9	12.5	12.7	0.634	0.617	0.626
2	2	1002248	2	18-Mar-10	Schedule (ii)	250	3	+S9	25	355	510	25	362	509	14.2	14.5	14.3	0.696	0.711	0.704
2	2	1002248	2	18-Mar-10	Schedule (ii)	275	3	+S9	25	392	503	25	399	514	15.7	16.0	15.8	0.779	0.776	0.778
2	2	1002248	2	18-Mar-10	Schedule (ii)	300	3	+S9	25	433	519	25	440	519	17.3	17.6	17.5	0.834	0.848	0.841
3	2	1002248	3	24-Mar-10	Schedule (ii)	0	3	+S9	25	180	506	25	184	503	7.20	7.36	7.28	0.356	0.366	0.361
3	2	1002248	3	24-Mar-10	Schedule (ii)	100	3	+S9	25	220	504	25	209	497	8.80	8.36	8.58	0.437	0.421	0.429
3	2	1002248	3	24-Mar-10	Schedule (ii)	150	3	+S9	25	260	500	25	268	496	10.4	10.7	10.6	0.520	0.540	0.530
3	2	1002248	3	24-Mar-10	Schedule (ii)	200	3	+S9	25	320	513	25	303	494	12.8	12.1	12.5	0.624	0.613	0.619
3	2	1002248	3	24-Mar-10	Schedule (ii)	250	3	+S9	25	377	513	25	383	491	15.1	15.3	15.2	0.735	0.780	0.757
3	2	1002248	3	24-Mar-10	Schedule (ii)	275	3	+S9	25	405	521	25	401	491	16.2	16.0	16.1	0.777	0.817	0.797
3	2	1002248	3	24-Mar-10	Schedule (ii)	300	3	+S9	25	453	519	25	451	501	18.1	18.0	18.1	0.873	0.900	0.887

Samples Generated Under 'FTC' Smoking Conditions 35mL puff volume; 60 second interval; 2 second duration; 0% vent blocking.

***In Vitro* Sister Chromatid Exchange Assay of CHO cells with (+) and without (-) S9 Metabolic Activation**  
**(Cell Scoring per flask)**

Set Number	Run Number	Sample ID	Replicate Number	Assay Date	Treatment Schedule	TPM (µg/mL)	Treatment Time (h)	Metabolic Activation	Flask 1						Flask 2					
									Metaphases Scored					AGT (hours)	Metaphases Scored					AGT (hours)
									M1	M1+	M2	M2+	PRI		M1	M1+	M2	M2+	PRI	
1	2	1002248	1	09-Mar-10	Schedule (i)	0	30	-S9	1	4	83	12	2.11	14.22	1	1	85	13	2.12	14.15
1	2	1002248	1	09-Mar-10	Schedule (i)	10	30	-S9	4	7	79	10	2.06	14.56	7	1	80	12	2.05	14.63
1	2	1002248	1	09-Mar-10	Schedule (i)	25	30	-S9	6	9	78	7	2.01	14.93	10	1	79	10	2.00	15.00
1	2	1002248	1	09-Mar-10	Schedule (i)	37.5	30	-S9	13	6	74	7	1.94	15.46	14	1	79	6	1.92	15.63
1	2	1002248	1	09-Mar-10	Schedule (i)	50	30	-S9	17	8	71	4	1.87	16.04	20	1	74	5	1.85	16.22
1	2	1002248	1	09-Mar-10	Schedule (i)	75	30	-S9	26	5	66	3	1.77	16.95	27	6	65	2	1.75	17.14
2	2	1002248	2	16-Mar-10	Schedule (i)	0	30	-S9	2	1	81	16	2.14	14.02	2	0	84	14	2.12	14.15
2	2	1002248	2	16-Mar-10	Schedule (i)	10	30	-S9	5	2	80	13	2.08	14.42	3	2	83	12	2.09	14.35
2	2	1002248	2	16-Mar-10	Schedule (i)	25	30	-S9	7	4	79	10	2.03	14.78	8	2	80	10	2.02	14.85
2	2	1002248	2	16-Mar-10	Schedule (i)	37.5	30	-S9	9	8	76	7	1.98	15.15	10	5	78	7	1.97	15.23
2	2	1002248	2	16-Mar-10	Schedule (i)	50	30	-S9	13	9	75	3	1.90	15.79	14	6	77	3	1.89	15.87
2	2	1002248	2	16-Mar-10	Schedule (i)	75	30	-S9	26	7	65	2	1.76	17.05	27	3	69	1	1.74	17.24
3	2	1002248	3	23-Mar-10	Schedule (i)	0	30	-S9	2	5	80	13	2.11	14.22	2	0	84	14	2.12	14.15
3	2	1002248	3	23-Mar-10	Schedule (i)	10	30	-S9	2	4	86	8	2.06	14.56	3	2	84	11	2.08	14.42
3	2	1002248	3	23-Mar-10	Schedule (i)	25	30	-S9	5	4	85	6	2.01	14.93	8	4	78	10	2.02	14.85
3	2	1002248	3	23-Mar-10	Schedule (i)	37.5	30	-S9	7	6	84	3	1.96	15.31	11	2	80	7	1.96	15.31
3	2	1002248	3	23-Mar-10	Schedule (i)	50	30	-S9	12	6	81	1	1.89	15.87	16	8	73	3	1.87	16.04
3	2	1002248	3	23-Mar-10	Schedule (i)	75	30	-S9	24	3	73	0	1.76	17.05	22	9	67	2	1.80	16.67
1	2	1002248	1	11-Mar-10	Schedule (ii)	0	3	+S9	4	1	82	13	2.09	14.35	1	0	84	15	2.14	14.02
1	2	1002248	1	11-Mar-10	Schedule (ii)	100	3	+S9	6	3	81	10	2.04	14.71	4	3	82	11	2.07	14.49
1	2	1002248	1	11-Mar-10	Schedule (ii)	150	3	+S9	5	2	88	5	2.00	15.00	10	3	78	9	1.99	15.08
1	2	1002248	1	11-Mar-10	Schedule (ii)	200	3	+S9	10	2	83	5	1.95	15.38	13	7	73	7	1.94	15.46
1	2	1002248	1	11-Mar-10	Schedule (ii)	250	3	+S9	15	2	78	5	1.90	15.79	17	6	72	5	1.88	15.96
1	2	1002248	1	11-Mar-10	Schedule (ii)	275	3	+S9	19	5	70	6	1.87	16.04	20	6	69	5	1.85	16.22
1	2	1002248	1	11-Mar-10	Schedule (ii)	300	3	+S9	22	2	73	3	1.81	16.57	24	7	67	2	1.78	16.85
2	2	1002248	2	18-Mar-10	Schedule (ii)	0	3	+S9	2	0	86	12	2.10	14.29	2	1	82	15	2.13	14.08
2	2	1002248	2	18-Mar-10	Schedule (ii)	100	3	+S9	4	2	84	10	2.06	14.56	4	1	84	11	2.07	14.49
2	2	1002248	2	18-Mar-10	Schedule (ii)	150	3	+S9	7	3	80	10	2.03	14.78	6	3	84	7	2.01	14.93
2	2	1002248	2	18-Mar-10	Schedule (ii)	200	3	+S9	12	7	74	7	1.95	15.38	11	4	78	7	1.96	15.31
2	2	1002248	2	18-Mar-10	Schedule (ii)	250	3	+S9	15	9	71	5	1.90	15.79	13	3	79	5	1.92	15.63
2	2	1002248	2	18-Mar-10	Schedule (ii)	275	3	+S9	19	6	72	3	1.84	16.30	18	4	74	4	1.86	16.13
2	2	1002248	2	18-Mar-10	Schedule (ii)	300	3	+S9	24	9	65	2	1.78	16.85	22	3	74	1	1.79	16.76
3	2	1002248	3	24-Mar-10	Schedule (ii)	0	3	+S9	3	0	81	16	2.13	14.08	2	0	82	16	2.14	14.02
3	2	1002248	3	24-Mar-10	Schedule (ii)	100	3	+S9	5	2	79	14	2.09	14.35	5	0	86	9	2.04	14.71
3	2	1002248	3	24-Mar-10	Schedule (ii)	150	3	+S9	10	0	75	15	2.05	14.63	8	3	80	9	2.01	14.93
3	2	1002248	3	24-Mar-10	Schedule (ii)	200	3	+S9	11	1	78	10	1.99	15.08	11	3	80	6	1.95	15.38
3	2	1002248	3	24-Mar-10	Schedule (ii)	250	3	+S9	16	1	73	10	1.94	15.46	14	6	75	5	1.91	15.71
3	2	1002248	3	24-Mar-10	Schedule (ii)	275	3	+S9	21	1	70	8	1.87	16.04	20	5	72	3	1.83	16.39
3	2	1002248	3	24-Mar-10	Schedule (ii)	300	3	+S9	24	0	73	3	1.79	16.76	21	4	74	1	1.80	16.67

**Samples Generated Under 'FTC' Smoking Conditions:** 35mL puff volume; 60 second interval; 2 second duration; 0% vent blocking.

**LABSTAT INTERNATIONAL ULC**

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Project: M125

Period: February 3 - 25, 2010

**Sample Generation and Dosing Data for *In Vitro* Sister Chromatid Exchange Assay Analysis**

Assay Analysis								mg extracted smokeless tobacco/mL media												
Set-Run	Sample	Replicate	Extraction	Tobacco	Volume	mg Tobacco	Moisture	Schedule (i)						Schedule (ii)						
Number	ID	Number	Date	Weight (g)	(mL) <sup>1</sup>	per mL	(%)	1	2	3	4	5	6	1	2	3	4	5	6	7
1-4	1002241	1	02-Feb-10	2.5003	22.5	111.124		0	0.111	0.278	0.417	0.556	0.833	0	1.11	1.67	2.22	2.78	3.06	3.33
2-1	1002241	2	09-Feb-10	2.5017	22.5	111.187	3.53	0	0.111	0.278	0.417	0.556	0.834	0	1.11	1.67	2.22	2.78	3.06	3.34
3-2	1002241	3	10-Feb-10	2.5019	22.5	111.196		0	0.111	0.278	0.417	0.556	0.834	0	1.11	1.67	2.22	2.78	3.06	3.34
1-3	1002242	1	02-Feb-10	2.5000	22.5	111.111		0	0.111	0.278	0.417	0.556	0.833	0	1.11	1.67	2.22	2.78	3.06	3.33
2-2	1002242	2	09-Feb-10	2.5006	22.5	111.138	49.4	0	0.111	0.278	0.417	0.556	0.834	0	1.11	1.67	2.22	2.78	3.06	3.33
3-1	1002242	3	10-Feb-10	2.5005	22.5	111.133		0	0.111	0.278	0.417	0.556	0.834	0	1.11	1.67	2.22	2.78	3.06	3.33
1-2	1002243	1	02-Feb-10	2.5002	22.5	111.120		0	0.111	0.278	0.417	0.556	0.833	0	1.11	1.67	2.22	2.78	3.06	3.33
2-3	1002243	2	09-Feb-10	2.5003	22.5	111.124	9.53	0	0.111	0.278	0.417	0.556	0.833	0	1.11	1.67	2.22	2.78	3.06	3.33
3-3	1002243	3	10-Feb-10	2.5008	22.5	111.147		0	0.111	0.278	0.417	0.556	0.834	0	1.11	1.67	2.22	2.78	3.06	3.33
4-1	1002244	1	16-Feb-10	2.5016	22.5	111.182		0	0.111	0.278	0.417	0.556	0.834	0	1.11	1.67	2.22	2.78	3.06	3.34
5-2	1002244	2	17-Feb-10	2.5008	22.5	111.147	53.8	0	0.111	0.278	0.417	0.556	0.834	0	1.11	1.67	2.22	2.78	3.06	3.33
6-3	1002244	3	18-Feb-10	2.5016	22.5	111.182		0	0.111	0.278	0.417	0.556	0.834	0	1.11	1.67	2.22	2.78	3.06	3.34
4-3	1002245	1	16-Feb-10	2.5013	22.5	111.169		0	0.111	0.278	0.417	0.556	0.834	0	1.11	1.67	2.22	2.78	3.06	3.34
5-3	1002245	2	17-Feb-10	2.5004	22.5	111.129	29.7	0	0.111	0.278	0.417	0.556	0.833	0	1.11	1.67	2.22	2.78	3.06	3.33
6-2	1002245	3	18-Feb-10	2.5015	22.5	111.178		0	0.111	0.278	0.417	0.556	0.834	0	1.11	1.67	2.22	2.78	3.06	3.34
4-2	1002246	1	16-Feb-10	2.5010	22.5	111.156		0	0.111	0.278	0.417	0.556	0.834	0	1.11	1.67	2.22	2.78	3.06	3.33
5-1	1002246	2	17-Feb-10	2.5017	22.5	111.187	7.72	0	0.111	0.278	0.417	0.556	0.834	0	1.11	1.67	2.22	2.78	3.06	3.34
6-1	1002246	3	18-Feb-10	2.5018	22.5	111.191		0	0.111	0.278	0.417	0.556	0.834	0	1.11	1.67	2.22	2.78	3.06	3.34
7-1	1002247	1	22-Feb-10	2.5006	22.5	111.138		0	0.111	0.278	0.417	0.556	0.834	0	1.11	1.67	2.22	2.78	3.06	3.33
8-1	1002247	2	23-Feb-10	2.5012	22.5	111.164	4.65	0	0.111	0.278	0.417	0.556	0.834	0	1.11	1.67	2.22	2.78	3.06	3.33
9-1	1002247	3	24-Feb-10	2.5012	22.5	111.164		0	0.111	0.278	0.417	0.556	0.834	0	1.11	1.67	2.22	2.78	3.06	3.33

Treatment Schedule	Tobacco Extract in Solvent (µL/mL media)						
	1	2	3	4	5	6	7
Schedule (i)	0	1	2.5	3.75	5	7.5	
Schedule (ii)	0	10	15	20	25	27.5	30

1. Samples extracted in appropriate solvent control to give a final concentration of 10.0 mg/mL

**LABSTAT INTERNATIONAL ULC**

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Project: M125

Period: February 3 - 25, 2010

**Sample Generation and Dosing Data for *In Vitro* Sister Chromatid Exchange Assay Analysis**

Assay Analysis									mg extracted moisture-corrected smokeless tobacco/mL media												
Set-Run	Sample	Replicate	Extraction	Tobacco	Volume	mg Tobacco	Moisture	mg (Tobacco-H <sub>2</sub> O)	Schedule (i)						Schedule (ii)						
Number	ID	Number	Date	Weight (g)	(mL) <sup>1</sup>	per mL	(%)	per mL	1	2	3	4	5	6	1	2	3	4	5	6	7
1-4	1002241	1	02-Feb-10	2.5003	22.5	111.124		107.199	0	0.107	0.268	0.402	0.536	0.804	0	1.07	1.61	2.14	2.68	2.95	3.22
2-1	1002241	2	09-Feb-10	2.5017	22.5	111.187	3.53	107.259	0	0.107	0.268	0.402	0.536	0.804	0	1.07	1.61	2.15	2.68	2.95	3.22
3-2	1002241	3	10-Feb-10	2.5019	22.5	111.196		107.268	0	0.107	0.268	0.402	0.536	0.805	0	1.07	1.61	2.15	2.68	2.95	3.22
1-3	1002242	1	02-Feb-10	2.5000	22.5	111.111		56.251	0	0.056	0.141	0.211	0.281	0.422	0	0.563	0.844	1.13	1.41	1.55	1.69
2-2	1002242	2	09-Feb-10	2.5006	22.5	111.138	49.4	56.265	0	0.056	0.141	0.211	0.281	0.422	0	0.563	0.844	1.13	1.41	1.55	1.69
3-1	1002242	3	10-Feb-10	2.5005	22.5	111.133		56.263	0	0.056	0.141	0.211	0.281	0.422	0	0.563	0.844	1.13	1.41	1.55	1.69
1-2	1002243	1	02-Feb-10	2.5002	22.5	111.120		100.531	0	0.101	0.251	0.377	0.503	0.754	0	1.01	1.51	2.01	2.51	2.76	3.02
2-3	1002243	2	09-Feb-10	2.5003	22.5	111.124	9.53	100.535	0	0.101	0.251	0.377	0.503	0.754	0	1.01	1.51	2.01	2.51	2.76	3.02
3-3	1002243	3	10-Feb-10	2.5008	22.5	111.147		100.555	0	0.101	0.251	0.377	0.503	0.754	0	1.01	1.51	2.01	2.51	2.77	3.02
4-1	1002244	1	16-Feb-10	2.5016	22.5	111.182		51.381	0	0.051	0.128	0.193	0.257	0.385	0	0.514	0.771	1.03	1.28	1.41	1.54
5-2	1002244	2	17-Feb-10	2.5008	22.5	111.147	53.8	51.365	0	0.051	0.128	0.193	0.257	0.385	0	0.514	0.770	1.03	1.28	1.41	1.54
6-3	1002244	3	18-Feb-10	2.5016	22.5	111.182		51.381	0	0.051	0.128	0.193	0.257	0.385	0	0.514	0.771	1.03	1.28	1.41	1.54
4-3	1002245	1	16-Feb-10	2.5013	22.5	111.169		78.192	0	0.078	0.195	0.293	0.391	0.586	0	0.782	1.17	1.56	1.95	2.15	2.35
5-3	1002245	2	17-Feb-10	2.5004	22.5	111.129	29.7	78.163	0	0.078	0.195	0.293	0.391	0.586	0	0.782	1.17	1.56	1.95	2.15	2.34
6-2	1002245	3	18-Feb-10	2.5015	22.5	111.178		78.198	0	0.078	0.195	0.293	0.391	0.586	0	0.782	1.17	1.56	1.95	2.15	2.35
4-2	1002246	1	16-Feb-10	2.5010	22.5	111.156		102.575	0	0.103	0.256	0.385	0.513	0.769	0	1.03	1.54	2.05	2.56	2.82	3.08
5-1	1002246	2	17-Feb-10	2.5017	22.5	111.187	7.72	102.604	0	0.103	0.257	0.385	0.513	0.770	0	1.03	1.54	2.05	2.57	2.82	3.08
6-1	1002246	3	18-Feb-10	2.5018	22.5	111.191		102.608	0	0.103	0.257	0.385	0.513	0.770	0	1.03	1.54	2.05	2.57	2.82	3.08
7-1	1002247	1	22-Feb-10	2.5006	22.5	111.138		105.969	0	0.106	0.265	0.397	0.530	0.795	0	1.06	1.59	2.12	2.65	2.91	3.18
8-1	1002247	2	23-Feb-10	2.5012	22.5	111.164	4.65	105.994	0	0.106	0.265	0.397	0.530	0.795	0	1.06	1.59	2.12	2.65	2.91	3.18
9-1	1002247	3	24-Feb-10	2.5012	22.5	111.164		105.994	0	0.106	0.265	0.397	0.530	0.795	0	1.06	1.59	2.12	2.65	2.91	3.18

Treatment Schedule	Tobacco Extract in Solvent (µL/mL media)						
	1	2	3	4	5	6	7
Schedule (i)	0	1	2.5	3.75	5	7.5	
Schedule (ii)	0	10	15	20	25	27.5	30

1. Samples extracted in appropriate solvent control to give a final concentration of 10.0 mg/mL

**LABSTAT INTERNATIONAL ULC**

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Project: M125

Period: February 3 - 25, 2010

**Sample Generation and Dosing Data for *In Vitro* Sister Chromatid Exchange Assay Analysis**

Set-Run	Sample	Replicate	Extraction	Tobacco	Volume	mg Tobacco	Moisture	Calculated Nicotine in	Calculated	µg extracted Nicotine in smokeless tobacco/mL media													
								Extraction Solution	Nicotine	Schedule (i)							Schedule (ii)						
Number	ID	Number	Date	Weight (g)	(mL) <sup>1</sup>	per mL	(%)	(mg/mL)	(mg/g)	1	2	3	4	5	6		1	2	3	4	5	6	7
1-4	1002241	1	02-Feb-10	2.5003	22.5	111.124		0.685	6.16	0	0.685	1.71	2.57	3.43	5.14		0	6.85	10.3	13.7	17.1	18.8	20.6
2-1	1002241	2	09-Feb-10	2.5017	22.5	111.187	3.53	0.694	6.24	0	0.694	1.74	2.60	3.47	5.21		0	6.94	10.4	13.9	17.4	19.1	20.8
3-2	1002241	3	10-Feb-10	2.5019	22.5	111.196		0.683	6.14	0	0.683	1.71	2.56	3.41	5.12		0	6.83	10.2	13.7	17.1	18.8	20.5
1-3	1002242	1	02-Feb-10	2.5000	22.5	111.111		1.49	13.4	0	1.49	3.71	5.57	7.43	11.1		0	14.9	22.3	29.7	37.1	40.8	44.6
2-2	1002242	2	09-Feb-10	2.5006	22.5	111.138	49.4	1.43	12.8	0	1.43	3.57	5.35	7.14	10.7		0	14.3	21.4	28.6	35.7	39.3	42.8
3-1	1002242	3	10-Feb-10	2.5005	22.5	111.133		1.44	12.9	0	1.44	3.59	5.38	7.18	10.8		0	14.4	21.5	28.7	35.9	39.5	43.1
1-2	1002243	1	02-Feb-10	2.5002	22.5	111.120		0.285	2.56	0	0.285	0.712	1.07	1.42	2.14		0	2.85	4.27	5.70	7.12	7.83	8.55
2-3	1002243	2	09-Feb-10	2.5003	22.5	111.124	9.53	0.283	2.55	0	0.283	0.708	1.06	1.42	2.13		0	2.83	4.25	5.67	7.08	7.79	8.50
3-3	1002243	3	10-Feb-10	2.5008	22.5	111.147		0.282	2.53	0	0.282	0.704	1.06	1.41	2.11		0	2.82	4.22	5.63	7.04	7.74	8.45
4-1	1002244	1	16-Feb-10	2.5016	22.5	111.182		1.42	12.7	0	1.42	3.54	5.31	7.08	10.6		0	14.2	21.2	28.3	35.4	38.9	42.5
5-2	1002244	2	17-Feb-10	2.5008	22.5	111.147	53.8	1.45	13.1	0	1.45	3.63	5.44	7.26	10.9		0	14.5	21.8	29.0	36.3	39.9	43.6
6-3	1002244	3	18-Feb-10	2.5016	22.5	111.182		1.50	13.5	0	1.50	3.75	5.63	7.51	11.3		0	15.0	22.5	30.0	37.5	41.3	45.0
4-3	1002245	1	16-Feb-10	2.5013	22.5	111.169		1.23	11.0	0	1.23	3.06	4.59	6.13	9.19		0	12.3	18.4	24.5	30.6	33.7	36.8
5-3	1002245	2	17-Feb-10	2.5004	22.5	111.129	29.7	1.14	10.2	0	1.14	2.85	4.27	5.69	8.54		0	11.4	17.1	22.8	28.5	31.3	34.2
6-2	1002245	3	18-Feb-10	2.5015	22.5	111.178		1.16	10.4	0	1.16	2.89	4.34	5.79	8.68		0	11.6	17.4	23.1	28.9	31.8	34.7
4-2	1002246	1	16-Feb-10	2.5010	22.5	111.156		0.292	2.63	0	0.292	0.730	1.10	1.46	2.19		0	2.92	4.38	5.84	7.30	8.03	8.76
5-1	1002246	2	17-Feb-10	2.5017	22.5	111.187	7.72	0.267	2.40	0	0.267	0.667	1.00	1.33	2.00		0	2.67	4.00	5.34	6.67	7.34	8.01
6-1	1002246	3	18-Feb-10	2.5018	22.5	111.191		0.610	5.49	0	0.610	1.53	2.29	3.05	4.58		0	6.10	9.15	12.2	15.3	16.8	18.3
7-1	1002247	1	22-Feb-10	2.5006	22.5	111.138		0.282	2.54	0	0.282	0.705	1.06	1.41	2.12		0	2.82	4.23	5.64	7.05	7.76	8.46
8-1	1002247	2	23-Feb-10	2.5012	22.5	111.164	4.65	0.329	2.96	0	0.329	0.823	1.23	1.65	2.47		0	3.29	4.94	6.58	8.23	9.05	9.87
9-1	1002247	3	24-Feb-10	2.5012	22.5	111.164		0.223	2.01	0	0.223	0.559	0.84	1.12	1.68		0	2.23	3.35	4.47	5.59	6.15	6.70

Treatment Schedule	Tobacco Extract in Solvent (µL/mL media)						
	1	2	3	4	5	6	7
Schedule (i)	0	1	2.5	3.75	5	7.5	
Schedule (ii)	0	10	15	20	25	27.5	30

1. Samples extracted in appropriate solvent control to give a final concentration of 10.0 mg/mL

**In Vitro Sister Chromatid Exchange Assay of CHO cells with (+) and without (-) S9 Metabolic Activation  
(Observations per flask)**

Set Number	Run Number	Sample ID	Replicate Number	Assay Date	Treatment Schedule	WT (µL/mL)	ST (mg/mL)	ST-H <sub>2</sub> O (mg/mL)	Nicotine (µg/mL)	Treatment Time (h)	Metabolic Activation	Cell Counts (Flask 1)			Cell Counts (Flask 2)			Sister Chromatid Exchanges per Cell/Chromosome					
												# of Cells	# of SCE	Number of chromosomes	# of Cells	# of SCE	Number of chromosomes	SCE per Cell			SCE per Chromosome		
																		Flask 1	Flask 2	Average	Flask 1	Flask 2	Average
1	4	1002241	1	04-Feb-10	Schedule (i)	0	0	0	0	30	-S9	25	155	514	25	137	506	6.20	5.48	5.84	0.302	0.271	0.286
1	4	1002241	1	04-Feb-10	Schedule (i)	1	0.111	0.107	0.685	30	-S9	25	207	504	25	199	512	8.28	7.96	8.12	0.411	0.389	0.400
1	4	1002241	1	04-Feb-10	Schedule (i)	2.5	0.278	0.268	1.71	30	-S9	25	243	511	25	226	512	9.72	9.04	9.38	0.476	0.441	0.458
1	4	1002241	1	04-Feb-10	Schedule (i)	3.75	0.417	0.402	2.57	30	-S9	25	268	514	25	260	502	10.7	10.4	10.6	0.521	0.518	0.520
1	4	1002241	1	04-Feb-10	Schedule (i)	5	0.556	0.536	3.43	30	-S9	25	280	520	25	286	518	11.2	11.4	11.3	0.538	0.552	0.545
1	4	1002241	1	04-Feb-10	Schedule (i)	7.5	0.833	0.804	5.14	30	-S9	25	342	505	25	309	508	13.7	12.4	13.0	0.68	0.61	0.64
2	1	1002241	2	11-Feb-10	Schedule (i)	0	0	0	0	30	-S9	25	159	524	25	156	505	6.36	6.24	6.30	0.303	0.309	0.306
2	1	1002241	2	11-Feb-10	Schedule (i)	1	0.111	0.107	0.694	30	-S9	25	196	519	25	191	515	7.84	7.64	7.74	0.378	0.371	0.374
2	1	1002241	2	11-Feb-10	Schedule (i)	2.5	0.278	0.268	1.74	30	-S9	25	238	510	25	230	514	9.52	9.20	9.36	0.467	0.447	0.457
2	1	1002241	2	11-Feb-10	Schedule (i)	3.75	0.417	0.402	2.60	30	-S9	25	276	515	25	259	512	11.0	10.4	10.7	0.536	0.506	0.521
2	1	1002241	2	11-Feb-10	Schedule (i)	5	0.556	0.536	3.47	30	-S9	25	292	509	25	283	520	11.7	11.3	11.5	0.574	0.544	0.559
2	1	1002241	2	11-Feb-10	Schedule (i)	7.5	0.834	0.804	5.21	30	-S9	25	347	503	25	314	501	13.9	12.6	13.2	0.69	0.63	0.66
3	2	1002241	3	23-Feb-10	Schedule (i)	0	0	0	0	30	-S9	25	163	512	25	170	498	6.52	6.80	6.66	0.318	0.341	0.330
3	2	1002241	3	23-Feb-10	Schedule (i)	1	0.111	0.107	0.683	30	-S9	25	198	527	25	203	503	7.92	8.12	8.02	0.376	0.404	0.390
3	2	1002241	3	23-Feb-10	Schedule (i)	2.5	0.278	0.268	1.71	30	-S9	25	241	522	25	253	503	9.64	10.12	9.88	0.462	0.503	0.482
3	2	1002241	3	23-Feb-10	Schedule (i)	3.75	0.417	0.402	2.56	30	-S9	25	272	523	25	267	508	10.9	10.7	10.8	0.520	0.526	0.523
3	2	1002241	3	23-Feb-10	Schedule (i)	5	0.556	0.536	3.41	30	-S9	25	298	519	25	318	506	11.9	12.7	12.3	0.574	0.628	0.601
3	2	1002241	3	23-Feb-10	Schedule (i)	7.5	0.834	0.805	5.12	30	-S9	25	343	520	25	354	505	13.7	14.2	13.9	0.66	0.70	0.68
1	3	1002242	1	04-Feb-10	Schedule (i)	0	0	0	0	30	-S9	25	162	519	25	153	525	6.48	6.12	6.30	0.312	0.291	0.302
1	3	1002242	1	04-Feb-10	Schedule (i)	1	0.111	0.056	1.49	30	-S9	25	188	505	25	191	523	7.52	7.64	7.58	0.372	0.365	0.369
1	3	1002242	1	04-Feb-10	Schedule (i)	2.5	0.278	0.141	3.71	30	-S9	25	228	515	25	223	526	9.12	8.92	9.02	0.443	0.424	0.433
1	3	1002242	1	04-Feb-10	Schedule (i)	3.75	0.417	0.211	5.57	30	-S9	25	274	510	25	267	525	11.0	10.7	10.8	0.537	0.509	0.523
1	3	1002242	1	04-Feb-10	Schedule (i)	5	0.556	0.281	7.43	30	-S9	25	304	501	25	299	521	12.2	12.0	12.1	0.607	0.574	0.590
1	3	1002242	1	04-Feb-10	Schedule (i)	7.5	0.833	0.422	11.1	30	-S9	25	328	505	25	332	525	13.1	13.3	13.2	0.65	0.63	0.64
2	2	1002242	2	11-Feb-10	Schedule (i)	0	0	0	0	30	-S9	25	142	509	25	147	514	5.68	5.88	5.78	0.279	0.286	0.282
2	2	1002242	2	11-Feb-10	Schedule (i)	1	0.111	0.056	1.43	30	-S9	25	180	517	25	177	510	7.20	7.08	7.14	0.348	0.347	0.348
2	2	1002242	2	11-Feb-10	Schedule (i)	2.5	0.278	0.141	3.57	30	-S9	25	210	513	25	202	507	8.40	8.08	8.24	0.409	0.398	0.404
2	2	1002242	2	11-Feb-10	Schedule (i)	3.75	0.417	0.211	5.35	30	-S9	25	235	514	25	225	504	9.4	9.0	9.2	0.457	0.446	0.452
2	2	1002242	2	11-Feb-10	Schedule (i)	5	0.556	0.281	7.14	30	-S9	25	274	506	25	268	501	11.0	10.7	10.8	0.542	0.535	0.538
2	2	1002242	2	11-Feb-10	Schedule (i)	7.5	0.834	0.422	10.7	30	-S9	25	302	518	25	315	513	12.1	12.6	12.3	0.58	0.61	0.60
3	1	1002242	3	23-Feb-10	Schedule (i)	0	0	0	0	30	-S9	25	163	508	25	153	512	6.52	6.12	6.32	0.321	0.299	0.310
3	1	1002242	3	23-Feb-10	Schedule (i)	1	0.111	0.056	1.44	30	-S9	25	197	513	25	189	514	7.88	7.56	7.72	0.384	0.368	0.376
3	1	1002242	3	23-Feb-10	Schedule (i)	2.5	0.278	0.141	3.59	30	-S9	25	233	512	25	212	498	9.32	8.48	8.90	0.455	0.426	0.440
3	1	1002242	3	23-Feb-10	Schedule (i)	3.75	0.417	0.211	5.38	30	-S9	25	265	517	25	241	501	10.6	9.6	10.1	0.513	0.481	0.497
3	1	1002242	3	23-Feb-10	Schedule (i)	5	0.556	0.281	7.18	30	-S9	25	301	505	25	297	530	12.0	11.9	12.0	0.596	0.560	0.578
3	1	1002242	3	23-Feb-10	Schedule (i)	7.5	0.834	0.422	10.8	30	-S9	25	329	509	25	336	505	13.2	13.4	13.3	0.65	0.67	0.66
1	2	1002243	1	04-Feb-10	Schedule (i)	0	0	0	0	30	-S9	25	154	522	25	158	510	6.16	6.32	6.24	0.295	0.310	0.302
1	2	1002243	1	04-Feb-10	Schedule (i)	1	0.111	0.101	0.285	30	-S9	25	190	510	25	182	493	7.60	7.28	7.44	0.373	0.369	0.371
1	2	1002243	1	04-Feb-10	Schedule (i)	2.5	0.278	0.251	0.712	30	-S9	25	227	515	25	218	513	9.08	8.72	8.90	0.441	0.425	0.433
1	2	1002243	1	04-Feb-10	Schedule (i)	3.75	0.417	0.377	1.07	30	-S9	25	242	502	25	245	512	9.7	9.8	9.7	0.482	0.479	0.480
1	2	1002243	1	04-Feb-10	Schedule (i)	5	0.556	0.503	1.42	30	-S9	25	292	527	25	278	507	11.7	11.1	11.4	0.554	0.548	0.551
1	2	1002243	1	04-Feb-10	Schedule (i)	7.5	0.833	0.754	2.14	30	-S9	25	315	505	25	301	501	12.6	12.0	12.3	0.62	0.60	0.61
2	3	1002243	2	11-Feb-10	Schedule (i)	0	0	0	0	30	-S9	25	153	512	25	163	507	6.12	6.52	6.32	0.299	0.321	0.310
2	3	1002243	2	11-Feb-10	Schedule (i)	1	0.111	0.101	0.283	30	-S9	25	198	515	25	196	513	7.92	7.84	7.88	0.384	0.382	0.383
2	3	1002243	2	11-Feb-10	Schedule (i)	2.5	0.278	0.251	0.708	30	-S9	25	230	513	25	227	524	9.20	9.08	9.14	0.448	0.433	0.441
2	3	1002243	2	11-Feb-10	Schedule (i)	3.75	0.417	0.377	1.06	30	-S9	25	251	517	25	269	510	10.0	10.8	10.4	0.485	0.527	0.506
2	3	1002243	2	11-Feb-10	Schedule (i)	5	0.556	0.503	1.42	30	-S9	25	291	521	25	321	513	11.6	12.8	12.2	0.559	0.626	0.592
2	3	1002243	2	11-Feb-10	Schedule (i)	7.5	0.833	0.754	2.13	30	-S9	25	322	511	25	331	508	12.9	13.2	13.1	0.63	0.65	0.64
3	3	1002243	3	23-Feb-10	Schedule (i)	0	0	0	0	30	-S9	25	169	534	25	161	517	6.76	6.44	6.60	0.316	0.311	0.314
3	3	1002243	3	23-Feb-10	Schedule (i)	1	0.111	0.101	0.282	30	-S9	25	201	513	25	195	516	8.04	7.80	7.92	0.392	0.378	0.385
3	3	1002243	3	23-Feb-10	Schedule (i)	2.5	0.278	0.251	0.704	30	-S9	25	227	508	25	235	516	9.08	9.40	9.24	0.447	0.455	0.451
3	3	1002243	3	23-Feb-10	Schedule (i)	3.75	0.417	0.377	1.06	30	-S9	25	254	513	25	258	520	10.2	10.3	10.2	0.495	0.496	0.496
3	3	1002243	3	23-Feb-10	Schedule (i)	5	0.556	0.503	1.41	30	-S9	25	285	507	25	288	520	11.4	11.5	11.5	0.562	0.554	0.558
3	3	1002243	3	23-Feb-10	Schedule (i)	7.5	0.834	0.754	2.11	30	-S9	25	326	515	25	324	524	13.0	13.0	13.0	0.63	0.62	0.63

**In Vitro Sister Chromatid Exchange Assay of CHO cells with (+) and without (-) S9 Metabolic Activation  
(Observations per flask)**

Set Number	Run Number	Sample ID	Replicate Number	Assay Date	Treatment Schedule	WT (μL/mL)	ST (mg/mL)	ST-H <sub>2</sub> O (mg/mL)	Nicotine (μg/mL)	Treatment Time (h)	Metabolic Activation	Cell Counts (Flask 1)			Cell Counts (Flask 2)			Sister Chromatid Exchanges per Cell/Chromosome					
												# of Cells	# of SCE	Number of chromosomes	# of Cells	# of SCE	Number of chromosomes	SCE per Cell			SCE per Chromosome		
																		Flask 1	Flask 2	Average	Flask 1	Flask 2	Average
4	1	1002244	1	02-Mar-10	Schedule (i)	0	0	0	0	30	-S9	25	157	523	25	154	515	6.28	6.16	6.22	0.300	0.299	0.300
4	1	1002244	1	02-Mar-10	Schedule (i)	1	0.111	0.051	1.42	30	-S9	25	193	523	25	186	516	7.72	7.44	7.58	0.369	0.360	0.365
4	1	1002244	1	02-Mar-10	Schedule (i)	2.5	0.278	0.128	3.54	30	-S9	25	226	524	25	223	515	9.04	8.92	8.98	0.431	0.433	0.432
4	1	1002244	1	02-Mar-10	Schedule (i)	3.75	0.417	0.193	5.31	30	-S9	25	273	525	25	264	514	10.9	10.6	10.7	0.520	0.514	0.517
4	1	1002244	1	02-Mar-10	Schedule (i)	5	0.556	0.257	7.08	30	-S9	25	324	525	25	313	512	13.0	12.5	12.7	0.617	0.611	0.614
4	1	1002244	1	02-Mar-10	Schedule (i)	7.5	0.834	0.385	10.62	30	-S9	25	372	526	25	357	500	14.9	14.3	14.6	0.71	0.71	0.71
5	2	1002244	2	09-Mar-10	Schedule (i)	0	0	0	0	30	-S9	25	157	496	25	163	524	6.28	6.52	6.40	0.317	0.311	0.314
5	2	1002244	2	09-Mar-10	Schedule (i)	1	0.111	0.051	1.45	30	-S9	25	201	499	25	184	525	8.04	7.36	7.70	0.403	0.350	0.377
5	2	1002244	2	09-Mar-10	Schedule (i)	2.5	0.278	0.128	3.63	30	-S9	25	228	496	25	225	526	9.12	9.00	9.06	0.460	0.428	0.444
5	2	1002244	2	09-Mar-10	Schedule (i)	3.75	0.417	0.193	5.44	30	-S9	25	254	504	25	269	526	10.2	10.8	10.5	0.504	0.511	0.508
5	2	1002244	2	09-Mar-10	Schedule (i)	5	0.556	0.257	7.26	30	-S9	25	297	496	25	316	523	11.9	12.6	12.3	0.599	0.604	0.601
5	2	1002244	2	09-Mar-10	Schedule (i)	7.5	0.834	0.385	10.89	30	-S9	25	357	498	25	369	524	14.3	14.8	14.5	0.72	0.70	0.71
6	3	1002244	3	16-Mar-10	Schedule (i)	0	0	0	0	30	-S9	25	156	497	25	168	523	6.24	6.72	6.48	0.314	0.321	0.318
6	3	1002244	3	16-Mar-10	Schedule (i)	1	0.111	0.051	1.50	30	-S9	25	194	495	25	201	524	7.76	8.04	7.90	0.392	0.384	0.388
6	3	1002244	3	16-Mar-10	Schedule (i)	2.5	0.278	0.128	3.75	30	-S9	25	222	501	25	231	526	8.88	9.24	9.06	0.443	0.439	0.441
6	3	1002244	3	16-Mar-10	Schedule (i)	3.75	0.417	0.193	5.63	30	-S9	25	270	494	25	275	527	10.8	11.0	10.9	0.547	0.522	0.534
6	3	1002244	3	16-Mar-10	Schedule (i)	5	0.556	0.257	7.51	30	-S9	25	317	490	25	323	523	12.7	12.9	12.8	0.647	0.618	0.632
6	3	1002244	3	16-Mar-10	Schedule (i)	7.5	0.834	0.385	11.26	30	-S9	25	364	511	25	374	524	14.6	15.0	14.8	0.71	0.71	0.71
4	3	1002245	1	02-Mar-10	Schedule (i)	0	0	0	0	30	-S9	25	152	506	25	154	496	6.08	6.16	6.12	0.300	0.310	0.305
4	3	1002245	1	02-Mar-10	Schedule (i)	1	0.111	0.078	1.23	30	-S9	25	191	503	25	198	503	7.64	7.92	7.78	0.380	0.394	0.387
4	3	1002245	1	02-Mar-10	Schedule (i)	2.5	0.278	0.195	3.06	30	-S9	25	205	500	25	223	495	8.20	8.92	8.56	0.410	0.451	0.430
4	3	1002245	1	02-Mar-10	Schedule (i)	3.75	0.417	0.293	4.59	30	-S9	25	224	508	25	234	508	9.0	9.4	9.2	0.441	0.461	0.451
4	3	1002245	1	02-Mar-10	Schedule (i)	5	0.556	0.391	6.13	30	-S9	25	249	505	25	261	509	10.0	10.4	10.2	0.493	0.513	0.503
4	3	1002245	1	02-Mar-10	Schedule (i)	7.5	0.834	0.586	9.19	30	-S9	25	291	515	25	297	509	11.6	11.9	11.8	0.57	0.58	0.57
5	3	1002245	2	09-Mar-10	Schedule (i)	0	0	0	0	30	-S9	25	145	518	25	163	504	5.80	6.52	6.16	0.280	0.323	0.302
5	3	1002245	2	09-Mar-10	Schedule (i)	1	0.111	0.078	1.14	30	-S9	25	179	513	25	186	507	7.16	7.44	7.30	0.349	0.367	0.358
5	3	1002245	2	09-Mar-10	Schedule (i)	2.5	0.278	0.195	2.85	30	-S9	25	214	517	25	216	514	8.56	8.64	8.60	0.414	0.420	0.417
5	3	1002245	2	09-Mar-10	Schedule (i)	3.75	0.417	0.293	4.27	30	-S9	25	244	519	25	239	504	9.8	9.6	9.7	0.470	0.474	0.472
5	3	1002245	2	09-Mar-10	Schedule (i)	5	0.556	0.391	5.69	30	-S9	25	273	517	25	266	506	10.9	10.6	10.8	0.528	0.526	0.527
5	3	1002245	2	09-Mar-10	Schedule (i)	7.5	0.833	0.586	8.54	30	-S9	25	288	517	25	282	514	11.5	11.3	11.4	0.56	0.55	0.55
6	2	1002245	3	16-Mar-10	Schedule (i)	0	0	0	0	30	-S9	25	160	523	25	166	490	6.40	6.64	6.52	0.306	0.339	0.322
6	2	1002245	3	16-Mar-10	Schedule (i)	1	0.111	0.078	1.16	30	-S9	25	184	523	25	191	495	7.36	7.64	7.50	0.352	0.386	0.369
6	2	1002245	3	16-Mar-10	Schedule (i)	2.5	0.278	0.195	2.89	30	-S9	25	215	526	25	206	511	8.60	8.24	8.42	0.409	0.403	0.406
6	2	1002245	3	16-Mar-10	Schedule (i)	3.75	0.417	0.293	4.34	30	-S9	25	246	526	25	239	496	9.8	9.6	9.7	0.468	0.482	0.475
6	2	1002245	3	16-Mar-10	Schedule (i)	5	0.556	0.391	5.79	30	-S9	25	274	527	25	281	496	11.0	11.2	11.1	0.520	0.567	0.543
6	2	1002245	3	16-Mar-10	Schedule (i)	7.5	0.834	0.586	8.68	30	-S9	25	301	525	25	308	515	12.0	12.3	12.2	0.57	0.60	0.59
4	2	1002246	1	02-Mar-10	Schedule (i)	0	0	0	0	30	-S9	25	162	507	25	156	517	6.48	6.24	6.36	0.320	0.302	0.311
4	2	1002246	1	02-Mar-10	Schedule (i)	1	0.111	0.103	0.292	30	-S9	25	193	509	25	193	527	7.72	7.72	7.72	0.379	0.366	0.373
4	2	1002246	1	02-Mar-10	Schedule (i)	2.5	0.278	0.256	0.730	30	-S9	25	228	491	25	232	519	9.12	9.28	9.20	0.464	0.447	0.456
4	2	1002246	1	02-Mar-10	Schedule (i)	3.75	0.417	0.385	1.10	30	-S9	25	276	507	25	283	525	11.0	11.3	11.2	0.544	0.539	0.542
4	2	1002246	1	02-Mar-10	Schedule (i)	5	0.556	0.513	1.46	30	-S9	25	311	498	25	322	519	12.4	12.9	12.7	0.624	0.620	0.622
4	2	1002246	1	02-Mar-10	Schedule (i)	7.5	0.834	0.769	2.19	30	-S9	25	351	500	25	349	511	14.0	14.0	14.0	0.70	0.68	0.69
5	1	1002246	2	09-Mar-10	Schedule (i)	0	0	0	0	30	-S9	25	162	525	25	169	515	6.48	6.76	6.62	0.309	0.328	0.318
5	1	1002246	2	09-Mar-10	Schedule (i)	1	0.111	0.103	0.267	30	-S9	25	198	526	25	185	512	7.92	7.40	7.66	0.376	0.361	0.369
5	1	1002246	2	09-Mar-10	Schedule (i)	2.5	0.278	0.257	0.667	30	-S9	25	219	525	25	229	524	8.76	9.16	8.96	0.417	0.437	0.427
5	1	1002246	2	09-Mar-10	Schedule (i)	3.75	0.417	0.385	1.00	30	-S9	25	271	526	25	274	512	10.8	11.0	10.9	0.515	0.535	0.525
5	1	1002246	2	09-Mar-10	Schedule (i)	5	0.556	0.513	1.33	30	-S9	25	313	524	25	301	523	12.5	12.0	12.3	0.597	0.576	0.586
5	1	1002246	2	09-Mar-10	Schedule (i)	7.5	0.834	0.770	2.00	30	-S9	25	342	526	25	344	530	13.7	13.8	13.7	0.65	0.65	0.65
6	1	1002246	3	16-Mar-10	Schedule (i)	0	0	0	0	30	-S9	25	161	494	25	165	522	6.44	6.60	6.52	0.326	0.316	0.321
6	1	1002246	3	16-Mar-10	Schedule (i)	1	0.111	0.103	0.610	30	-S9	25	197	486	25	192	508	7.88	7.68	7.78	0.405	0.378	0.392
6	1	1002246	3	16-Mar-10	Schedule (i)	2.5	0.278	0.257	1.53	30	-S9	25	217	503	25	223	524	8.68	8.92	8.80	0.431	0.426	0.428
6	1	1002246	3	16-Mar-10	Schedule (i)	3.75	0.417	0.385	2.29	30	-S9	25	265	505	25	277	527	10.6	11.1	10.8	0.525	0.526	0.525
6	1	1002246	3	16-Mar-10	Schedule (i)	5	0.556	0.513	3.05	30	-S9	25	312	500	25	315	511	12.5	12.6	12.5	0.624	0.616	0.620
6	1	1002246	3	16-Mar-10	Schedule (i)	7.5	0.834	0.770	4.58	30	-S9	25	338	501	25	345	529	13.5	13.8	13.7	0.67	0.65	0.66

**In Vitro Sister Chromatid Exchange Assay of CHO cells with (+) and without (-) S9 Metabolic Activation  
(Observations per flask)**

Set Number	Run Number	Sample ID	Replicate Number	Assay Date	Treatment Schedule	WT (µL/mL)	ST (mg/mL)	ST-H <sub>2</sub> O (mg/mL)	Nicotine (µg/mL)	Treatment Time (h)	Metabolic Activation	Cell Counts (Flask 1)			Cell Counts (Flask 2)			Sister Chromatid Exchanges per Cell/Chromosome					
												# of Cells	# of SCE	Number of chromosomes	# of Cells	# of SCE	Number of chromosomes	SCE per Cell			SCE per Chromosome		
																		Flask 1	Flask 2	Average	Flask 1	Flask 2	Average
7	1	1002247	1	23-Mar-10	Schedule (i)	0	0	0	0	30	-S9	25	154	512	25	161	524	6.16	6.44	6.30	0.301	0.307	0.304
7	1	1002247	1	23-Mar-10	Schedule (i)	1	0.111	0.106	0.282	30	-S9	25	200	510	25	198	522	8.00	7.92	7.96	0.392	0.379	0.386
7	1	1002247	1	23-Mar-10	Schedule (i)	2.5	0.278	0.265	0.705	30	-S9	25	222	508	25	226	525	8.88	9.04	8.96	0.437	0.430	0.434
7	1	1002247	1	23-Mar-10	Schedule (i)	3.75	0.417	0.397	1.06	30	-S9	25	256	510	25	265	524	10.2	10.6	10.4	0.502	0.506	0.504
7	1	1002247	1	23-Mar-10	Schedule (i)	5	0.556	0.530	1.41	30	-S9	25	280	511	25	293	523	11.2	11.7	11.5	0.548	0.560	0.554
7	1	1002247	1	23-Mar-10	Schedule (i)	7.5	0.834	0.795	2.12	30	-S9	25	328	510	25	335	523	13.1	13.4	13.3	0.64	0.64	0.64
8	1	1002247	2	25-Mar-10	Schedule (i)	0	0	0	0	30	-S9	25	149	507	25	151	489	5.96	6.04	6.00	0.294	0.309	0.301
8	1	1002247	2	25-Mar-10	Schedule (i)	1	0.111	0.106	0.329	30	-S9	25	203	517	25	195	493	8.12	7.80	7.96	0.393	0.396	0.394
8	1	1002247	2	25-Mar-10	Schedule (i)	2.5	0.278	0.265	0.823	30	-S9	25	226	514	25	238	490	9.04	9.52	9.28	0.440	0.486	0.463
8	1	1002247	2	25-Mar-10	Schedule (i)	3.75	0.417	0.397	1.23	30	-S9	25	253	513	25	251	497	10.1	10.0	10.1	0.493	0.505	0.499
8	1	1002247	2	25-Mar-10	Schedule (i)	5	0.556	0.530	1.65	30	-S9	25	292	505	25	300	497	11.7	12.0	11.8	0.578	0.604	0.591
8	1	1002247	2	25-Mar-10	Schedule (i)	7.5	0.834	0.795	2.47	30	-S9	25	333	517	25	348	517	13.3	13.9	13.6	0.64	0.67	0.66
9	1	1002247	3	30-Mar-10	Schedule (i)	0	0	0	0	30	-S9	25	170	523	25	175	501	6.80	7.00	6.90	0.325	0.349	0.337
9	1	1002247	3	30-Mar-10	Schedule (i)	1	0.111	0.106	0.223	30	-S9	25	195	524	25	199	503	7.80	7.96	7.88	0.372	0.396	0.384
9	1	1002247	3	30-Mar-10	Schedule (i)	2.5	0.278	0.265	0.559	30	-S9	25	224	524	25	213	507	8.96	8.52	8.74	0.427	0.420	0.424
9	1	1002247	3	30-Mar-10	Schedule (i)	3.75	0.417	0.397	0.838	30	-S9	25	256	523	25	258	508	10.2	10.3	10.3	0.489	0.508	0.499
9	1	1002247	3	30-Mar-10	Schedule (i)	5	0.556	0.530	1.12	30	-S9	25	297	526	25	316	515	11.9	12.6	12.3	0.565	0.614	0.589
9	1	1002247	3	30-Mar-10	Schedule (i)	7.5	0.834	0.795	1.68	30	-S9	25	350	524	25	361	508	14.0	14.4	14.2	0.67	0.71	0.69
1	4	1002241	1	09-Feb-10	Schedule (ii)	0	0	0	0	3	+S9	25	153	517	25	160	521	6.12	6.40	6.26	0.296	0.307	0.302
1	4	1002241	1	09-Feb-10	Schedule (ii)	10	1.11	1.07	6.85	3	+S9	25	175	509	25	179	523	7.00	7.16	7.08	0.344	0.342	0.343
1	4	1002241	1	09-Feb-10	Schedule (ii)	15	1.67	1.61	10.3	3	+S9	25	207	513	25	200	524	8.3	8.0	8.1	0.404	0.382	0.393
1	4	1002241	1	09-Feb-10	Schedule (ii)	20	2.22	2.14	13.7	3	+S9	25	220	515	25	213	523	8.8	8.5	8.7	0.427	0.407	0.417
1	4	1002241	1	09-Feb-10	Schedule (ii)	25	2.78	2.68	17.1	3	+S9	25	244	510	25	227	523	9.8	9.1	9.4	0.478	0.434	0.456
1	4	1002241	1	09-Feb-10	Schedule (ii)	27.5	3.06	2.95	18.8	3	+S9	25	260	507	25	246	525	10.4	9.8	10.1	0.513	0.469	0.491
1	4	1002241	1	09-Feb-10	Schedule (ii)	30	3.33	3.22	20.6	3	+S9	25	280	506	25	274	526	11.2	11.0	11.1	0.553	0.521	0.537
2	1	1002241	2	17-Feb-10	Schedule (ii)	0	0	0	0	3	+S9	25	173	523	25	163	517	6.92	6.52	6.72	0.331	0.315	0.323
2	1	1002241	2	17-Feb-10	Schedule (ii)	10	1.11	1.07	6.94	3	+S9	25	187	515	25	182	511	7.48	7.28	7.38	0.363	0.356	0.360
2	1	1002241	2	17-Feb-10	Schedule (ii)	15	1.67	1.61	10.4	3	+S9	25	222	518	25	210	504	8.9	8.4	8.6	0.429	0.417	0.423
2	1	1002241	2	17-Feb-10	Schedule (ii)	20	2.22	2.15	13.9	3	+S9	25	241	515	25	230	527	9.6	9.2	9.4	0.468	0.436	0.452
2	1	1002241	2	17-Feb-10	Schedule (ii)	25	2.78	2.68	17.4	3	+S9	25	259	513	25	247	503	10.4	9.9	10.1	0.505	0.491	0.498
2	1	1002241	2	17-Feb-10	Schedule (ii)	27.5	3.06	2.95	19.1	3	+S9	25	283	510	25	263	518	11.3	10.5	10.9	0.555	0.508	0.531
2	1	1002241	2	17-Feb-10	Schedule (ii)	30	3.34	3.22	20.8	3	+S9	25	302	515	25	283	514	12.1	11.3	11.7	0.586	0.551	0.568
3	2	1002241	3	25-Feb-10	Schedule (ii)	0	0	0	0	3	+S9	25	163	505	25	176	512	6.52	7.04	6.78	0.323	0.344	0.333
3	2	1002241	3	25-Feb-10	Schedule (ii)	10	1.11	1.07	6.83	3	+S9	25	189	520	25	203	512	7.56	8.12	7.84	0.363	0.396	0.380
3	2	1002241	3	25-Feb-10	Schedule (ii)	15	1.67	1.61	10.2	3	+S9	25	210	519	25	225	510	8.4	9.0	8.7	0.405	0.441	0.423
3	2	1002241	3	25-Feb-10	Schedule (ii)	20	2.22	2.15	13.7	3	+S9	25	243	513	25	245	513	9.7	9.8	9.8	0.474	0.478	0.476
3	2	1002241	3	25-Feb-10	Schedule (ii)	25	2.78	2.68	17.1	3	+S9	25	253	522	25	268	512	10.1	10.7	10.4	0.485	0.523	0.504
3	2	1002241	3	25-Feb-10	Schedule (ii)	27.5	3.06	2.95	18.8	3	+S9	25	279	512	25	295	511	11.2	11.8	11.5	0.545	0.577	0.561
3	2	1002241	3	25-Feb-10	Schedule (ii)	30	3.34	3.22	20.5	3	+S9	25	293	517	25	300	509	11.7	12.0	11.9	0.567	0.589	0.578
1	3	1002242	1	09-Feb-10	Schedule (ii)	0	0	0	0	3	+S9	25	156	516	25	163	510	6.24	6.52	6.38	0.302	0.320	0.311
1	3	1002242	1	09-Feb-10	Schedule (ii)	10	1.11	0.563	14.9	3	+S9	25	199	510	25	186	514	7.96	7.44	7.70	0.390	0.362	0.376
1	3	1002242	1	09-Feb-10	Schedule (ii)	15	1.67	0.844	22.3	3	+S9	25	216	498	25	224	513	8.6	9.0	8.8	0.434	0.437	0.435
1	3	1002242	1	09-Feb-10	Schedule (ii)	20	2.22	1.13	29.7	3	+S9	25	221	494	25	227	516	8.8	9.1	9.0	0.447	0.440	0.444
1	3	1002242	1	09-Feb-10	Schedule (ii)	25	2.78	1.41	37.1	3	+S9	25	262	513	25	251	525	10.5	10.0	10.3	0.511	0.478	0.494
1	3	1002242	1	09-Feb-10	Schedule (ii)	27.5	3.06	1.55	40.8	3	+S9	25	286	520	25	278	518	11.4	11.1	11.3	0.550	0.537	0.543
1	3	1002242	1	09-Feb-10	Schedule (ii)	30	3.33	1.69	44.6	3	+S9	25	291	517	25	288	515	11.6	11.5	11.6	0.563	0.559	0.561
2	2	1002242	2	17-Feb-10	Schedule (ii)	0	0	0	0	3	+S9	25	183	513	25	180	517	7.32	7.20	7.26	0.357	0.348	0.352
2	2	1002242	2	17-Feb-10	Schedule (ii)	10	1.11	0.563	14.3	3	+S9	25	205	519	25	216	513	8.20	8.64	8.42	0.395	0.421	0.408
2	2	1002242	2	17-Feb-10	Schedule (ii)	15	1.67	0.844	21.4	3	+S9	25	229	511	25	228	518	9.2	9.1	9.1	0.448	0.440	0.444
2	2	1002242	2	17-Feb-10	Schedule (ii)	20	2.22	1.13	28.6	3	+S9	25	239	509	25	232	509	9.6	9.3	9.4	0.470	0.456	0.463
2	2	1002242	2	17-Feb-10	Schedule (ii)	25	2.78	1.41	35.7	3	+S9	25	254	517	25	261	506	10.2	10.4	10.3	0.491	0.516	0.504
2	2	1002242	2	17-Feb-10	Schedule (ii)	27.5	3.06	1.55	39.3	3	+S9	25	275	511	25	283	515	11.0	11.3	11.2	0.538	0.550	0.544
2	2	1002242	2	17-Feb-10	Schedule (ii)	30	3.33	1.69	42.8	3	+S9	25	298	507	25	311	508	11.9	12.4	12.2	0.588	0.612	0.600

**In Vitro Sister Chromatid Exchange Assay of CHO cells with (+) and without (-) S9 Metabolic Activation  
(Observations per flask)**

Set Number	Run Number	Sample ID	Replicate Number	Assay Date	Treatment Schedule	WT (μL/mL)	ST (mg/mL)	ST-H <sub>2</sub> O (mg/mL)	Nicotine (μg/mL)	Treatment Time (h)	Metabolic Activation	Cell Counts (Flask 1)			Cell Counts (Flask 2)			Sister Chromatid Exchanges per Cell/Chromosome					
												# of Cells	# of SCE	Number of chromosomes	# of Cells	# of SCE	Number of chromosomes	SCE per Cell			SCE per Chromosome		
																		Flask 1	Flask 2	Average	Flask 1	Flask 2	Average
3	1	1002242	3	25-Feb-10	Schedule (ii)	0	0	0	0	3	+S9	25	164	508	25	155	504	6.56	6.20	6.38	0.323	0.308	0.315
3	1	1002242	3	25-Feb-10	Schedule (ii)	10	1.11	0.563	14.4	3	+S9	25	195	496	25	182	514	7.80	7.28	7.54	0.393	0.354	0.374
3	1	1002242	3	25-Feb-10	Schedule (ii)	15	1.67	0.844	21.5	3	+S9	25	213	510	25	210	502	8.5	8.4	8.5	0.418	0.418	0.418
3	1	1002242	3	25-Feb-10	Schedule (ii)	20	2.22	1.13	28.7	3	+S9	25	224	500	25	222	507	9.0	8.9	8.9	0.448	0.438	0.443
3	1	1002242	3	25-Feb-10	Schedule (ii)	25	2.78	1.41	35.9	3	+S9	25	230	514	25	245	520	9.2	9.8	9.5	0.447	0.471	0.459
3	1	1002242	3	25-Feb-10	Schedule (ii)	27.5	3.06	1.55	39.5	3	+S9	25	250	500	25	259	509	10.0	10.4	10.2	0.500	0.509	0.504
3	1	1002242	3	25-Feb-10	Schedule (ii)	30	3.33	1.69	43.1	3	+S9	25	289	496	25	282	505	11.6	11.3	11.4	0.583	0.558	0.571
1	2	1002243	1	09-Feb-10	Schedule (ii)	0	0	0	0	3	+S9	25	150	508	25	171	513	6.00	6.84	6.42	0.295	0.333	0.314
1	2	1002243	1	09-Feb-10	Schedule (ii)	10	1.11	1.01	2.85	3	+S9	25	219	504	25	191	523	8.76	7.64	8.20	0.435	0.365	0.400
1	2	1002243	1	09-Feb-10	Schedule (ii)	15	1.67	1.51	4.27	3	+S9	25	241	513	25	227	509	9.6	9.1	9.4	0.470	0.446	0.458
1	2	1002243	1	09-Feb-10	Schedule (ii)	20	2.22	2.01	5.70	3	+S9	25	244	511	25	245	518	9.8	9.8	9.8	0.477	0.473	0.475
1	2	1002243	1	09-Feb-10	Schedule (ii)	25	2.78	2.51	7.12	3	+S9	25	261	509	25	264	510	10.4	10.6	10.5	0.513	0.518	0.515
1	2	1002243	1	09-Feb-10	Schedule (ii)	27.5	3.06	2.76	7.83	3	+S9	25	280	523	25	276	528	11.2	11.0	11.1	0.535	0.523	0.529
1	2	1002243	1	09-Feb-10	Schedule (ii)	30	3.33	3.02	8.55	3	+S9	25	296	520	25	284	514	11.8	11.4	11.6	0.569	0.553	0.561
2	3	1002243	2	17-Feb-10	Schedule (ii)	0	0	0	0	3	+S9	25	165	523	25	173	500	6.60	6.92	6.76	0.315	0.346	0.331
2	3	1002243	2	17-Feb-10	Schedule (ii)	10	1.11	1.01	2.83	3	+S9	25	210	519	25	211	507	8.40	8.44	8.42	0.405	0.416	0.410
2	3	1002243	2	17-Feb-10	Schedule (ii)	15	1.67	1.51	4.25	3	+S9	25	238	516	25	233	517	9.5	9.3	9.4	0.461	0.451	0.456
2	3	1002243	2	17-Feb-10	Schedule (ii)	20	2.22	2.01	5.67	3	+S9	25	252	507	25	248	518	10.1	9.9	10.0	0.497	0.479	0.488
2	3	1002243	2	17-Feb-10	Schedule (ii)	25	2.78	2.51	7.08	3	+S9	25	270	515	25	276	504	10.8	11.0	10.9	0.524	0.548	0.536
2	3	1002243	2	17-Feb-10	Schedule (ii)	27.5	3.06	2.76	7.79	3	+S9	25	284	517	25	289	502	11.4	11.6	11.5	0.549	0.576	0.563
2	3	1002243	2	17-Feb-10	Schedule (ii)	30	3.33	3.02	8.50	3	+S9	25	297	518	25	305	508	11.9	12.2	12.0	0.573	0.600	0.587
3	3	1002243	3	25-Feb-10	Schedule (ii)	0	0	0	0	3	+S9	25	165	521	25	164	511	6.60	6.56	6.58	0.317	0.321	0.319
3	3	1002243	3	25-Feb-10	Schedule (ii)	10	1.11	1.01	2.82	3	+S9	25	205	542	25	193	517	8.20	7.72	7.96	0.378	0.373	0.376
3	3	1002243	3	25-Feb-10	Schedule (ii)	15	1.67	1.51	4.22	3	+S9	25	235	525	25	226	508	9.4	9.0	9.2	0.448	0.445	0.446
3	3	1002243	3	25-Feb-10	Schedule (ii)	20	2.22	2.01	5.63	3	+S9	25	255	514	25	245	520	10.2	9.8	10.0	0.496	0.471	0.484
3	3	1002243	3	25-Feb-10	Schedule (ii)	25	2.78	2.51	7.04	3	+S9	25	273	527	25	264	515	10.9	10.6	10.7	0.518	0.513	0.515
3	3	1002243	3	25-Feb-10	Schedule (ii)	27.5	3.06	2.77	7.74	3	+S9	25	283	523	25	277	517	11.3	11.1	11.2	0.541	0.536	0.538
3	3	1002243	3	25-Feb-10	Schedule (ii)	30	3.33	3.02	8.45	3	+S9	25	300	526	25	287	513	12.0	11.5	11.7	0.570	0.559	0.565
4	1	1002244	1	04-Mar-10	Schedule (ii)	0	0	0	0	3	+S9	25	159	502	25	178	531	6.36	7.12	6.74	0.32	0.34	0.33
4	1	1002244	1	04-Mar-10	Schedule (ii)	10	1.11	0.514	14.2	3	+S9	25	207	513	25	224	513	8.28	8.96	8.62	0.40	0.44	0.42
4	1	1002244	1	04-Mar-10	Schedule (ii)	15	1.67	0.771	21.2	3	+S9	25	238	497	25	235	517	9.5	9.4	9.5	0.48	0.45	0.47
4	1	1002244	1	04-Mar-10	Schedule (ii)	20	2.22	1.03	28.3	3	+S9	25	270	497	25	252	522	10.8	10.1	10.4	0.54	0.48	0.51
4	1	1002244	1	04-Mar-10	Schedule (ii)	25	2.78	1.28	35.4	3	+S9	25	274	507	25	273	521	11.0	10.9	10.9	0.54	0.52	0.53
4	1	1002244	1	04-Mar-10	Schedule (ii)	27.5	3.06	1.41	38.9	3	+S9	25	301	514	25	291	522	12.0	11.6	11.8	0.59	0.56	0.57
4	1	1002244	1	04-Mar-10	Schedule (ii)	30	3.34	1.54	42.5	3	+S9	25	322	523	25	317	530	12.9	12.7	12.8	0.62	0.60	0.61
5	2	1002244	2	11-Mar-10	Schedule (ii)	0	0	0	0	3	+S9	25	167	508	25	174	524	6.68	6.96	6.82	0.329	0.332	0.330
5	2	1002244	2	11-Mar-10	Schedule (ii)	10	1.11	0.514	14.5	3	+S9	25	213	503	25	195	527	8.52	7.80	8.16	0.423	0.370	0.397
5	2	1002244	2	11-Mar-10	Schedule (ii)	15	1.67	0.770	21.8	3	+S9	25	223	487	25	218	525	8.9	8.7	8.8	0.458	0.415	0.437
5	2	1002244	2	11-Mar-10	Schedule (ii)	20	2.22	1.03	29.0	3	+S9	25	252	501	25	249	524	10.1	10.0	10.0	0.503	0.475	0.489
5	2	1002244	2	11-Mar-10	Schedule (ii)	25	2.78	1.28	36.3	3	+S9	25	258	497	25	264	523	10.3	10.6	10.4	0.519	0.505	0.512
5	2	1002244	2	11-Mar-10	Schedule (ii)	27.5	3.06	1.41	39.9	3	+S9	25	289	502	25	292	524	11.6	11.7	11.6	0.576	0.557	0.566
5	2	1002244	2	11-Mar-10	Schedule (ii)	30	3.33	1.54	43.6	3	+S9	25	327	494	25	319	524	13.1	12.8	12.9	0.662	0.609	0.635
6	3	1002244	3	18-Mar-10	Schedule (ii)	0	0	0	0	3	+S9	25	174	517	25	173	525	6.96	6.92	6.94	0.337	0.330	0.333
6	3	1002244	3	18-Mar-10	Schedule (ii)	10	1.11	0.514	15.0	3	+S9	25	198	521	25	192	523	7.92	7.68	7.80	0.380	0.367	0.374
6	3	1002244	3	18-Mar-10	Schedule (ii)	15	1.67	0.771	22.5	3	+S9	25	226	513	25	224	522	9.0	9.0	9.0	0.441	0.429	0.435
6	3	1002244	3	18-Mar-10	Schedule (ii)	20	2.22	1.03	30.0	3	+S9	25	246	514	25	248	524	9.8	9.9	9.9	0.479	0.473	0.476
6	3	1002244	3	18-Mar-10	Schedule (ii)	25	2.78	1.28	37.5	3	+S9	25	278	510	25	267	523	11.1	10.7	10.9	0.545	0.511	0.528
6	3	1002244	3	18-Mar-10	Schedule (ii)	27.5	3.06	1.41	41.3	3	+S9	25	302	505	25	293	525	12.1	11.7	11.9	0.598	0.558	0.578
6	3	1002244	3	18-Mar-10	Schedule (ii)	30	3.34	1.54	45.0	3	+S9	25	324	511	25	315	526	13.0	12.6	12.8	0.634	0.599	0.616
4	3	1002245	1	04-Mar-10	Schedule (ii)	0	0	0	0	3	+S9	25	154	491	25	149	520	6.16	5.96	6.06	0.314	0.287	0.300
4	3	1002245	1	04-Mar-10	Schedule (ii)	10	1.11	0.782	12.3	3	+S9	25	191	508	25	178	505	7.64	7.12	7.38	0.376	0.352	0.364
4	3	1002245	1	04-Mar-10	Schedule (ii)	15	1.67	1.17	18.4	3	+S9	25	198	516	25	203	506	7.9	8.1	8.0	0.384	0.401	0.392
4	3	1002245	1	04-Mar-10	Schedule (ii)	20	2.22	1.56	24.5	3	+S9	25	217	531	25	225	501	8.7	9.0	8.8	0.409	0.449	0.429
4	3	1002245	1	04-Mar-10	Schedule (ii)	25	2.78	1.95	30.6	3	+S9	25	237	526	25	247	521	9.5	9.9	9.7	0.451	0.474	0.462
4	3	1002245	1	04-Mar-10	Schedule (ii)	27.5	3.06	2.15	33.7	3	+S9	25	247	511	25	263	505	9.9	10.5	10.2	0.483	0.521	0.502
4	3	1002245	1	04-Mar-10	Schedule (ii)	30	3.34	2.35	36.8	3	+S9	25	262	527	25	276	513	10.5	11.0	10.8	0.497	0.538	0.518

**In Vitro Sister Chromatid Exchange Assay of CHO cells with (+) and without (-) S9 Metabolic Activation  
(Observations per flask)**

Set Number	Run Number	Sample ID	Replicate Number	Assay Date	Treatment Schedule	WT (μL/mL)	ST (mg/mL)	ST-H <sub>2</sub> O (mg/mL)	Nicotine (μg/mL)	Treatment Time (h)	Metabolic Activation	Cell Counts (Flask 1)			Cell Counts (Flask 2)			Sister Chromatid Exchanges per Cell/Chromosome					
												# of Cells	# of SCE	Number of chromosomes	# of Cells	# of SCE	Number of chromosomes	SCE per Cell			SCE per Chromosome		
																		Flask 1	Flask 2	Average	Flask 1	Flask 2	Average
5	3	1002245	2	11-Mar-10	Schedule (ii)	0	0	0	0	3	+S9	25	177	508	25	165	512	7.08	6.60	6.84	0.348	0.322	0.335
5	3	1002245	2	11-Mar-10	Schedule (ii)	10	1.11	0.782	11.4	3	+S9	25	213	512	25	202	527	8.52	8.08	8.30	0.416	0.383	0.400
5	3	1002245	2	11-Mar-10	Schedule (ii)	15	1.67	1.17	17.1	3	+S9	25	223	509	25	214	522	8.9	8.6	8.7	0.438	0.410	0.424
5	3	1002245	2	11-Mar-10	Schedule (ii)	20	2.22	1.56	22.8	3	+S9	25	238	512	25	228	523	9.5	9.1	9.3	0.465	0.436	0.450
5	3	1002245	2	11-Mar-10	Schedule (ii)	25	2.78	1.95	28.5	3	+S9	25	274	508	25	257	518	11.0	10.3	10.6	0.539	0.496	0.518
5	3	1002245	2	11-Mar-10	Schedule (ii)	27.5	3.06	2.15	31.3	3	+S9	25	294	513	25	280	526	11.8	11.2	11.5	0.573	0.532	0.553
5	3	1002245	2	11-Mar-10	Schedule (ii)	30	3.33	2.34	34.2	3	+S9	25	301	507	25	294	517	12.0	11.8	11.9	0.594	0.569	0.581
6	2	1002245	3	18-Mar-10	Schedule (ii)	0	0	0	0	3	+S9	25	192	518	25	177	524	7.68	7.08	7.38	0.37	0.34	0.35
6	2	1002245	3	18-Mar-10	Schedule (ii)	10	1.11	0.782	11.6	3	+S9	25	208	516	25	194	524	8.32	7.76	8.04	0.40	0.37	0.39
6	2	1002245	3	18-Mar-10	Schedule (ii)	15	1.67	1.17	17.4	3	+S9	25	232	516	25	214	525	9.3	8.6	8.9	0.45	0.41	0.43
6	2	1002245	3	18-Mar-10	Schedule (ii)	20	2.22	1.56	23.1	3	+S9	25	258	506	25	231	525	10.3	9.2	9.8	0.51	0.44	0.47
6	2	1002245	3	18-Mar-10	Schedule (ii)	25	2.78	1.95	28.9	3	+S9	25	268	508	25	254	524	10.7	10.2	10.4	0.53	0.48	0.51
6	2	1002245	3	18-Mar-10	Schedule (ii)	27.5	3.06	2.15	31.8	3	+S9	25	284	518	25	275	524	11.4	11.0	11.2	0.55	0.52	0.54
6	2	1002245	3	18-Mar-10	Schedule (ii)	30	3.34	2.35	34.7	3	+S9	25	298	512	25	296	526	11.9	11.8	11.9	0.58	0.56	0.57
4	2	1002246	1	04-Mar-10	Schedule (ii)	0	0	0	0	3	+S9	25	153	518	25	178	515	6.12	7.12	6.62	0.295	0.346	0.320
4	2	1002246	1	04-Mar-10	Schedule (ii)	10	1.11	1.03	2.92	3	+S9	25	187	508	25	208	511	7.48	8.32	7.90	0.368	0.407	0.388
4	2	1002246	1	04-Mar-10	Schedule (ii)	15	1.67	1.54	4.38	3	+S9	25	213	517	25	227	512	8.5	9.1	8.8	0.412	0.443	0.428
4	2	1002246	1	04-Mar-10	Schedule (ii)	20	2.22	2.05	5.84	3	+S9	25	231	510	25	237	518	9.2	9.5	9.4	0.453	0.458	0.455
4	2	1002246	1	04-Mar-10	Schedule (ii)	25	2.78	2.56	7.30	3	+S9	25	248	515	25	256	525	9.9	10.2	10.1	0.482	0.488	0.485
4	2	1002246	1	04-Mar-10	Schedule (ii)	27.5	3.06	2.82	8.03	3	+S9	25	266	516	25	282	526	10.6	11.3	11.0	0.516	0.536	0.526
4	2	1002246	1	04-Mar-10	Schedule (ii)	30	3.33	3.08	8.76	3	+S9	25	287	509	25	308	524	11.5	12.3	11.9	0.564	0.588	0.576
5	1	1002246	2	11-Mar-10	Schedule (ii)	0	0	0	0	3	+S9	25	151	507	25	180	525	6.04	7.20	6.62	0.298	0.343	0.320
5	1	1002246	2	11-Mar-10	Schedule (ii)	10	1.11	1.03	2.67	3	+S9	25	205	504	25	203	511	8.20	8.12	8.16	0.407	0.397	0.402
5	1	1002246	2	11-Mar-10	Schedule (ii)	15	1.67	1.54	4.00	3	+S9	25	228	496	25	230	515	9.1	9.2	9.2	0.460	0.447	0.453
5	1	1002246	2	11-Mar-10	Schedule (ii)	20	2.22	2.05	5.34	3	+S9	25	268	505	25	267	511	10.7	10.7	10.7	0.531	0.523	0.527
5	1	1002246	2	11-Mar-10	Schedule (ii)	25	2.78	2.57	6.67	3	+S9	25	285	502	25	278	511	11.4	11.1	11.3	0.568	0.544	0.556
5	1	1002246	2	11-Mar-10	Schedule (ii)	27.5	3.06	2.82	7.34	3	+S9	25	294	506	25	299	504	11.8	12.0	11.9	0.581	0.593	0.587
5	1	1002246	2	11-Mar-10	Schedule (ii)	30	3.34	3.08	8.01	3	+S9	25	321	511	25	310	509	12.8	12.4	12.6	0.628	0.609	0.619
6	1	1002246	3	18-Mar-10	Schedule (ii)	0	0	0	0	3	+S9	25	172	496	25	179	504	6.88	7.16	7.02	0.347	0.355	0.351
6	1	1002246	3	18-Mar-10	Schedule (ii)	10	1.11	1.03	6.10	3	+S9	25	213	503	25	206	512	8.52	8.24	8.38	0.423	0.402	0.413
6	1	1002246	3	18-Mar-10	Schedule (ii)	15	1.67	1.54	9.15	3	+S9	25	236	502	25	229	511	9.4	9.2	9.3	0.470	0.448	0.459
6	1	1002246	3	18-Mar-10	Schedule (ii)	20	2.22	2.05	12.2	3	+S9	25	249	509	25	244	509	10.0	9.8	9.9	0.489	0.479	0.484
6	1	1002246	3	18-Mar-10	Schedule (ii)	25	2.78	2.57	15.3	3	+S9	25	257	497	25	255	512	10.3	10.2	10.2	0.517	0.498	0.508
6	1	1002246	3	18-Mar-10	Schedule (ii)	27.5	3.06	2.82	16.8	3	+S9	25	289	503	25	272	507	11.6	10.9	11.2	0.575	0.536	0.556
6	1	1002246	3	18-Mar-10	Schedule (ii)	30	3.34	3.08	18.3	3	+S9	25	312	496	25	295	510	12.5	11.8	12.1	0.629	0.578	0.604
7	1	1002247	1	24-Mar-10	Schedule (ii)	0	0	0	0	3	+S9	25	153	523	25	167	529	6.12	6.68	6.40	0.293	0.316	0.304
7	1	1002247	1	24-Mar-10	Schedule (ii)	10	1.11	1.06	2.82	3	+S9	25	173	523	25	182	501	6.92	7.28	7.10	0.331	0.363	0.347
7	1	1002247	1	24-Mar-10	Schedule (ii)	15	1.67	1.59	4.23	3	+S9	25	195	526	25	201	510	7.8	8.0	7.9	0.371	0.394	0.382
7	1	1002247	1	24-Mar-10	Schedule (ii)	20	2.22	2.12	5.64	3	+S9	25	219	524	25	217	523	8.8	8.7	8.7	0.418	0.415	0.416
7	1	1002247	1	24-Mar-10	Schedule (ii)	25	2.78	2.65	7.05	3	+S9	25	243	522	25	253	527	9.7	10.1	9.9	0.466	0.480	0.473
7	1	1002247	1	24-Mar-10	Schedule (ii)	27.5	3.06	2.91	7.76	3	+S9	25	270	524	25	265	516	10.8	10.6	10.7	0.515	0.514	0.514
7	1	1002247	1	24-Mar-10	Schedule (ii)	30	3.33	3.18	8.46	3	+S9	25	294	523	25	292	517	11.8	11.7	11.7	0.562	0.565	0.563
8	1	1002247	2	25-Mar-10	Schedule (ii)	0	0	0	0	3	+S9	25	158	518	25	167	501	6.32	6.68	6.50	0.305	0.333	0.319
8	1	1002247	2	25-Mar-10	Schedule (ii)	10	1.11	1.06	3.29	3	+S9	25	188	514	25	185	502	7.52	7.40	7.46	0.366	0.369	0.367
8	1	1002247	2	25-Mar-10	Schedule (ii)	15	1.67	1.59	4.94	3	+S9	25	200	523	25	210	510	8.0	8.4	8.2	0.382	0.412	0.397
8	1	1002247	2	25-Mar-10	Schedule (ii)	20	2.22	2.12	6.58	3	+S9	25	220	521	25	223	495	8.8	8.9	8.9	0.422	0.451	0.436
8	1	1002247	2	25-Mar-10	Schedule (ii)	25	2.78	2.65	8.23	3	+S9	25	233	514	25	240	498	9.3	9.6	9.5	0.453	0.482	0.468
8	1	1002247	2	25-Mar-10	Schedule (ii)	27.5	3.06	2.91	9.05	3	+S9	25	260	508	25	255	495	10.4	10.2	10.3	0.512	0.515	0.513
8	1	1002247	2	25-Mar-10	Schedule (ii)	30	3.33	3.18	9.87	3	+S9	25	288	507	25	304	501	11.5	12.2	11.8	0.568	0.607	0.587
9	1	1002247	3	30-Mar-10	Schedule (ii)	0	0	0	0	3	+S9	25	168	517	25	152	505	6.72	6.08	6.40	0.325	0.301	0.313
9	1	1002247	3	30-Mar-10	Schedule (ii)	10	1.11	1.06	2.23	3	+S9	25	196	515	25	191	502	7.84	7.64	7.74	0.381	0.380	0.381
9	1	1002247	3	30-Mar-10	Schedule (ii)	15	1.67	1.59	3.35	3	+S9	25	227	512	25	216	501	9.1	8.6	8.9	0.443	0.431	0.437
9	1	1002247	3	30-Mar-10	Schedule (ii)	20	2.22	2.12	4.47	3	+S9	25	254	522	25	248	504	10.2	9.9	10.0	0.487	0.492	0.489
9	1	1002247	3	30-Mar-10	Schedule (ii)	25	2.78	2.65	5.59	3	+S9	25	274	505	25	266	507	11.0	10.6	10.8	0.543	0.525	0.534
9	1	1002247	3	30-Mar-10	Schedule (ii)	27.5	3.06	2.91	6.15	3	+S9	25	282	514	25	275	509	11.3	11.0	11.1	0.549	0.540	0.544
9	1	1002247	3	30-Mar-10	Schedule (ii)	30	3.33	3.18	6.70	3	+S9	25	295	524	25	304	517	11.8	12.2	12.0	0.563	0.588	0.575

***In Vitro* Sister Chromatid Exchange Assay of CHO cells with (+) and without (-) S9 Metabolic Activation  
(Cell Scoring per flask)**

Set Number	Run Number	Sample ID	Replicate Number	Assay Date	Treatment Schedule	WT (μL/mL)	ST (mg/mL)	ST-H <sub>2</sub> O (mg/mL)	Nicotine (μg/mL)	Treatment Time (h)	Metabolic Activation	Flask 1						Flask 2					
												Metaphases Scored					AGT (hours)	Metaphases Scored					AGT (hours)
												M1	M1+	M2	M2+	PRI		M1	M1+	M2	M2+	PRI	
1	4	1002241	1	04-Feb-10	Schedule (i)	0	0	0	0	30	-S9	3	0	80	17	2.14	14 02	3	0	82	15	2.12	14.15
1	4	1002241	1	04-Feb-10	Schedule (i)	1	0.111	0.107	0.685	30	-S9	7	2	77	14	2.07	14.49	4	1	84	11	2.07	14.49
1	4	1002241	1	04-Feb-10	Schedule (i)	2.5	0.278	0.268	1.71	30	-S9	10	5	75	10	2.00	15 00	6	3	81	10	2.04	14.71
1	4	1002241	1	04-Feb-10	Schedule (i)	3.75	0.417	0.402	2.57	30	-S9	13	4	73	10	1.97	15 23	7	6	79	8	2.01	14.93
1	4	1002241	1	04-Feb-10	Schedule (i)	5	0.556	0.536	3.43	30	-S9	14	7	73	6	1.92	15 63	11	5	77	7	1.96	15 31
1	4	1002241	1	04-Feb-10	Schedule (i)	7.5	0.833	0.804	5.14	30	-S9	16	8	72	4	1.88	15 96	12	3	81	4	1.92	15 63
2	1	1002241	2	11-Feb-10	Schedule (i)	0	0	0	0	30	-S9	2	0	86	12	2.10	14 29	3	0	85	12	2.09	14 35
2	1	1002241	2	11-Feb-10	Schedule (i)	1	0.111	0.107	0.694	30	-S9	5	0	81	14	2.09	14 35	2	3	87	8	2.06	14 56
2	1	1002241	2	11-Feb-10	Schedule (i)	2.5	0.278	0.268	1.74	30	-S9	7	0	81	12	2.05	14 63	5	1	86	8	2.03	14.78
2	1	1002241	2	11-Feb-10	Schedule (i)	3.75	0.417	0.402	2.60	30	-S9	11	3	77	9	1.98	15.15	9	2	82	7	1.98	15.15
2	1	1002241	2	11-Feb-10	Schedule (i)	5	0.556	0.536	3.47	30	-S9	12	1	79	8	1.96	15 31	11	2	81	6	1.95	15 38
2	1	1002241	2	11-Feb-10	Schedule (i)	7.5	0.834	0.804	5.21	30	-S9	16	1	77	6	1.90	15.79	13	3	79	5	1.92	15 63
3	2	1002241	3	23-Feb-10	Schedule (i)	0	0	0	0	30	-S9	2	1	84	13	2.11	14 22	2	0	82	16	2.14	14 02
3	2	1002241	3	23-Feb-10	Schedule (i)	1	0.111	0.107	0.683	30	-S9	4	3	82	11	2.07	14.49	5	2	82	11	2.06	14 56
3	2	1002241	3	23-Feb-10	Schedule (i)	2.5	0.278	0.268	1.71	30	-S9	6	5	80	9	2.03	14.78	8	5	77	10	2.02	14 85
3	2	1002241	3	23-Feb-10	Schedule (i)	3.75	0.417	0.402	2.56	30	-S9	8	3	81	8	2.00	15 00	13	7	73	7	1.94	15.46
3	2	1002241	3	23-Feb-10	Schedule (i)	5	0.556	0.536	3.41	30	-S9	11	2	79	8	1.97	15 23	15	11	68	6	1.91	15.71
3	2	1002241	3	23-Feb-10	Schedule (i)	7.5	0.834	0.805	5.12	30	-S9	18	0	77	5	1.87	16 04	19	9	68	4	1.85	16 22
1	3	1002242	1	04-Feb-10	Schedule (i)	0	0	0	0	30	-S9	2	1	88	9	2.07	14.49	2	3	82	13	2.11	14 22
1	3	1002242	1	04-Feb-10	Schedule (i)	1	0.111	0.056	1.49	30	-S9	3	3	88	6	2.03	14.78	8	8	72	12	2.04	14.71
1	3	1002242	1	04-Feb-10	Schedule (i)	2.5	0.278	0.141	3.71	30	-S9	5	4	86	5	2.00	15 00	8	7	76	9	2.01	14 93
1	3	1002242	1	04-Feb-10	Schedule (i)	3.75	0.417	0.211	5.57	30	-S9	7	2	87	4	1.97	15 23	10	7	77	6	1.96	15 31
1	3	1002242	1	04-Feb-10	Schedule (i)	5	0.556	0.281	7.43	30	-S9	9	3	86	2	1.93	15 54	13	2	79	6	1.93	15 54
1	3	1002242	1	04-Feb-10	Schedule (i)	7.5	0.833	0.422	11.1	30	-S9	12	5	82	1	1.89	15 87	13	7	77	3	1.90	15.79
2	2	1002242	2	11-Feb-10	Schedule (i)	0	0	0	0	30	-S9	3	1	84	12	2.09	14 35	2	1	82	15	2.13	14 08
2	2	1002242	2	11-Feb-10	Schedule (i)	1	0.111	0.056	1.43	30	-S9	5	2	83	10	2.05	14 63	4	3	81	12	2.08	14.42
2	2	1002242	2	11-Feb-10	Schedule (i)	2.5	0.278	0.141	3.57	30	-S9	6	4	83	7	2.01	14 93	9	8	72	11	2.02	14 85
2	2	1002242	2	11-Feb-10	Schedule (i)	3.75	0.417	0.211	5.35	30	-S9	11	5	78	6	1.95	15 38	12	5	74	9	1.97	15 23
2	2	1002242	2	11-Feb-10	Schedule (i)	5	0.556	0.281	7.14	30	-S9	16	3	74	7	1.91	15.71	16	7	72	5	1.89	15 87
2	2	1002242	2	11-Feb-10	Schedule (i)	7.5	0.834	0.422	10.7	30	-S9	15	4	78	3	1.88	15 96	18	10	70	2	1.84	16 30
3	1	1002242	3	23-Feb-10	Schedule (i)	0	0	0	0	30	-S9	2	3	81	14	2.12	14.15	2	2	84	12	2.10	14 29
3	1	1002242	3	23-Feb-10	Schedule (i)	1	0.111	0.056	1.44	30	-S9	4	2	83	11	2.07	14.49	5	2	84	9	2.04	14.71
3	1	1002242	3	23-Feb-10	Schedule (i)	2.5	0.278	0.141	3.59	30	-S9	6	4	81	9	2.03	14.78	7	3	82	8	2.01	14 93
3	1	1002242	3	23-Feb-10	Schedule (i)	3.75	0.417	0.211	5.38	30	-S9	8	5	80	7	1.99	15 08	8	4	82	6	1.98	15.15
3	1	1002242	3	23-Feb-10	Schedule (i)	5	0.556	0.281	7.18	30	-S9	12	5	77	6	1.94	15.46	15	0	77	8	1.93	15 54
3	1	1002242	3	23-Feb-10	Schedule (i)	7.5	0.834	0.422	10.8	30	-S9	16	8	71	5	1.89	15 87	16	3	78	3	1.87	16 04
1	2	1002243	1	04-Feb-10	Schedule (i)	0	0	0	0	30	-S9	2	2	81	15	2.13	14 08	1	5	84	10	2.09	14 35
1	2	1002243	1	04-Feb-10	Schedule (i)	1	0.111	0.101	0.285	30	-S9	5	2	80	13	2.08	14.42	4	2	86	8	2.04	14.71
1	2	1002243	1	04-Feb-10	Schedule (i)	2.5	0.278	0.251	0.712	30	-S9	9	0	78	13	2.04	14.71	6	2	85	7	2.01	14 93
1	2	1002243	1	04-Feb-10	Schedule (i)	3.75	0.417	0.377	1.07	30	-S9	11	2	77	10	1.99	15 08	8	5	82	5	1.97	15 23
1	2	1002243	1	04-Feb-10	Schedule (i)	5	0.556	0.503	1.42	30	-S9	15	1	76	8	1.93	15 54	9	5	83	3	1.94	15.46
1	2	1002243	1	04-Feb-10	Schedule (i)	7.5	0.833	0.754	2.14	30	-S9	15	3	79	3	1.88	15 96	10	7	82	1	1.91	15.71

**In Vitro Sister Chromatid Exchange Assay of CHO cells with (+) and without (-) S9 Metabolic Activation  
(Cell Scoring per flask)**

Set Number	Run Number	Sample ID	Replicate Number	Assay Date	Treatment Schedule	WT (μL/mL)	ST (mg/mL)	ST-H <sub>2</sub> O (mg/mL)	Nicotine (μg/mL)	Treatment Time (h)	Metabolic Activation	Flask 1						Flask 2					
												Metaphases Scored					AGT (hours)	Metaphases Scored					AGT (hours)
												M1	M1+	M2	M2+	PRI		M1	M1+	M2	M2+	PRI	
2	3	1002243	2	11-Feb-10	Schedule (i)	0	0	0	0	30	-S9	3	2	82	13	2.10	14 29	2	2	79	17	2.15	13 95
2	3	1002243	2	11-Feb-10	Schedule (i)	1	0.111	0.101	0.283	30	-S9	4	3	83	10	2.06	14 56	5	3	83	9	2.04	14.71
2	3	1002243	2	11-Feb-10	Schedule (i)	2.5	0.278	0.251	0.708	30	-S9	5	6	81	8	2.03	14.78	10	4	78	8	1.98	15.15
2	3	1002243	2	11-Feb-10	Schedule (i)	3.75	0.417	0.377	1.06	30	-S9	9	2	80	9	2.00	15 00	11	5	77	7	1.96	15 31
2	3	1002243	2	11-Feb-10	Schedule (i)	5	0.556	0.503	1.42	30	-S9	11	3	77	7	1.92	15 63	13	8	75	4	1.91	15.71
2	3	1002243	2	11-Feb-10	Schedule (i)	7.5	0.833	0.754	2.13	30	-S9	15	3	79	3	1.88	15 96	15	9	73	3	1.88	15 96
3	3	1002243	3	23-Feb-10	Schedule (i)	0	0	0	0	30	-S9	1	2	83	14	2.13	14 08	1	1	85	13	2.12	14.15
3	3	1002243	3	23-Feb-10	Schedule (i)	1	0.111	0.101	0.282	30	-S9	3	2	84	11	2.08	14.42	6	0	82	12	2.06	14 56
3	3	1002243	3	23-Feb-10	Schedule (i)	2.5	0.278	0.251	0.704	30	-S9	4	6	83	7	2.03	14.78	7	0	83	10	2.03	14.78
3	3	1002243	3	23-Feb-10	Schedule (i)	3.75	0.417	0.377	1.06	30	-S9	11	3	79	7	1.96	15 31	8	0	86	6	1.98	15.15
3	3	1002243	3	23-Feb-10	Schedule (i)	5	0.556	0.503	1.41	30	-S9	13	3	79	5	1.92	15 63	13	2	80	5	1.92	15 63
3	3	1002243	3	23-Feb-10	Schedule (i)	7.5	0.834	0.754	2.11	30	-S9	16	5	75	4	1.88	15 96	15	2	79	4	1.89	15 87
4	1	1002244	1	02-Mar-10	Schedule (i)	0	0	0	0	30	-S9	2	0	85	13	2.11	14 22	2	3	81	14	2.12	14.15
4	1	1002244	1	02-Mar-10	Schedule (i)	1	0.111	0.051	1.42	30	-S9	3	2	84	11	2.08	14.42	4	3	82	11	2.07	14.49
4	1	1002244	1	02-Mar-10	Schedule (i)	2.5	0.278	0.128	3.54	30	-S9	3	3	88	6	2.03	14.78	5	4	83	8	2.03	14.78
4	1	1002244	1	02-Mar-10	Schedule (i)	3.75	0.417	0.193	5.31	30	-S9	9	4	82	5	1.96	15 31	9	3	82	6	1.97	15 23
4	1	1002244	1	02-Mar-10	Schedule (i)	5	0.556	0.257	7.08	30	-S9	13	1	83	3	1.90	15.79	14	2	78	6	1.92	15 63
4	1	1002244	1	02-Mar-10	Schedule (i)	7.5	0.834	0.385	10 62	30	-S9	16	2	81	1	1.85	16 22	17	3	76	4	1.87	16 04
5	2	1002244	2	09-Mar-10	Schedule (i)	0	0	0	0	30	-S9	2	0	85	13	2.11	14 22	1	1	86	12	2.11	14 22
5	2	1002244	2	09-Mar-10	Schedule (i)	1	0.111	0.051	1.45	30	-S9	5	1	84	10	2.05	14 63	4	3	83	10	2.06	14 56
5	2	1002244	2	09-Mar-10	Schedule (i)	2.5	0.278	0.128	3.63	30	-S9	7	5	81	7	2.00	15 00	4	4	86	6	2.02	14 85
5	2	1002244	2	09-Mar-10	Schedule (i)	3.75	0.417	0.193	5.44	30	-S9	14	8	73	5	1.91	15.71	9	4	82	5	1.96	15 31
5	2	1002244	2	09-Mar-10	Schedule (i)	5	0.556	0.257	7.26	30	-S9	18	9	70	3	1.85	16 22	11	4	83	2	1.91	15.71
5	2	1002244	2	09-Mar-10	Schedule (i)	7.5	0.834	0.385	10 89	30	-S9	17	10	71	2	1.85	16 22	17	4	76	3	1.86	16.13
6	3	1002244	3	16-Mar-10	Schedule (i)	0	0	0	0	30	-S9	2	0	83	15	2.13	14 08	2	0	86	12	2.10	14 29
6	3	1002244	3	16-Mar-10	Schedule (i)	1	0.111	0.051	1.50	30	-S9	3	3	81	13	2.10	14 29	0	4	89	7	2.07	14.49
6	3	1002244	3	16-Mar-10	Schedule (i)	2.5	0.278	0.128	3.75	30	-S9	6	2	83	9	2.03	14.78	8	5	78	9	2.01	14 93
6	3	1002244	3	16-Mar-10	Schedule (i)	3.75	0.417	0.193	5.63	30	-S9	10	5	77	8	1.98	15.15	9	7	80	4	1.95	15 38
6	3	1002244	3	16-Mar-10	Schedule (i)	5	0.556	0.257	7.51	30	-S9	14	4	77	5	1.91	15.71	13	7	78	2	1.89	15 87
6	3	1002244	3	16-Mar-10	Schedule (i)	7.5	0.834	0.385	11 26	30	-S9	17	7	73	3	1.86	16.13	16	6	77	1	1.85	16 22
4	3	1002245	1	02-Mar-10	Schedule (i)	0	0	0	0	30	-S9	2	2	83	13	2.11	14 22	1	0	83	16	2.15	13 95
4	3	1002245	1	02-Mar-10	Schedule (i)	1	0.111	0.078	1.23	30	-S9	5	3	81	11	2.06	14 56	3	2	83	12	2.09	14 35
4	3	1002245	1	02-Mar-10	Schedule (i)	2.5	0.278	0.195	3.06	30	-S9	8	2	80	10	2.02	14 85	8	3	79	10	2.02	14 85
4	3	1002245	1	02-Mar-10	Schedule (i)	3.75	0.417	0.293	4.59	30	-S9	9	2	82	7	1.98	15.15	11	4	78	7	1.96	15 31
4	3	1002245	1	02-Mar-10	Schedule (i)	5	0.556	0.391	6.13	30	-S9	11	2	81	6	1.95	15 38	16	6	73	5	1.89	15 87
4	3	1002245	1	02-Mar-10	Schedule (i)	7.5	0.834	0.586	9.19	30	-S9	14	2	80	4	1.90	15.79	18	8	71	3	1.85	16 22
5	3	1002245	2	09-Mar-10	Schedule (i)	0	0	0	0	30	-S9	2	3	83	12	2.10	14 29	3	1	82	14	2.11	14 22
5	3	1002245	2	09-Mar-10	Schedule (i)	1	0.111	0.078	1.14	30	-S9	4	6	80	10	2.06	14 56	5	2	81	12	2.07	14.49
5	3	1002245	2	09-Mar-10	Schedule (i)	2.5	0.278	0.195	2.85	30	-S9	9	5	77	9	2.00	15 00	7	2	82	9	2.02	14 85
5	3	1002245	2	09-Mar-10	Schedule (i)	3.75	0.417	0.293	4.27	30	-S9	11	6	76	7	1.96	15 31	9	3	81	7	1.98	15.15
5	3	1002245	2	09-Mar-10	Schedule (i)	5	0.556	0.391	5.69	30	-S9	13	8	74	5	1.92	15 63	13	2	79	6	1.93	15 54
5	3	1002245	2	09-Mar-10	Schedule (i)	7.5	0.833	0.586	8.54	30	-S9	14	12	71	3	1.89	15 87	15	2	80	3	1.88	15 96

**In Vitro Sister Chromatid Exchange Assay of CHO cells with (+) and without (-) S9 Metabolic Activation  
(Cell Scoring per flask)**

Set Number	Run Number	Sample ID	Replicate Number	Assay Date	Treatment Schedule	WT (μL/mL)	ST (mg/mL)	ST-H <sub>2</sub> O (mg/mL)	Nicotine (μg/mL)	Treatment Time (h)	Metabolic Activation	Flask 1						Flask 2					
												Metaphases Scored					AGT (hours)	Metaphases Scored					AGT (hours)
												M1	M1+	M2	M2+	PRI		M1	M1+	M2	M2+	PRI	
6	2	1002245	3	16-Mar-10	Schedule (i)	0	0	0	0	30	-S9	1	5	81	13	2.12	14.15	2	0	84	14	2.12	14.15
6	2	1002245	3	16-Mar-10	Schedule (i)	1	0.111	0.078	1.16	30	-S9	6	5	77	12	2.06	14.56	4	0	86	10	2.06	14.56
6	2	1002245	3	16-Mar-10	Schedule (i)	2.5	0.278	0.195	2.89	30	-S9	10	8	71	11	2.01	14.93	8	2	82	8	2.00	15.00
6	2	1002245	3	16-Mar-10	Schedule (i)	3.75	0.417	0.293	4.34	30	-S9	7	5	84	4	1.97	15.23	10	2	82	6	1.96	15.31
6	2	1002245	3	16-Mar-10	Schedule (i)	5	0.556	0.391	5.79	30	-S9	11	3	82	4	1.93	15.54	15	3	79	3	1.88	15.96
6	2	1002245	3	16-Mar-10	Schedule (i)	7.5	0.834	0.586	8.68	30	-S9	15	1	80	4	1.89	15.87	19	5	75	1	1.82	16.48
4	2	1002246	1	02-Mar-10	Schedule (i)	0	0	0	0	30	-S9	1	2	82	15	2.14	14.02	1	3	84	12	2.11	14.22
4	2	1002246	1	02-Mar-10	Schedule (i)	1	0.111	0.103	0.292	30	-S9	5	2	82	11	2.06	14.56	6	1	81	12	2.06	14.56
4	2	1002246	1	02-Mar-10	Schedule (i)	2.5	0.278	0.256	0.730	30	-S9	9	3	80	8	1.99	15.08	10	0	79	11	2.01	14.93
4	2	1002246	1	02-Mar-10	Schedule (i)	3.75	0.417	0.385	1.10	30	-S9	12	6	75	7	1.95	15.38	12	1	81	6	1.94	15.46
4	2	1002246	1	02-Mar-10	Schedule (i)	5	0.556	0.513	1.46	30	-S9	17	7	72	4	1.87	16.04	16	0	78	6	1.90	15.79
4	2	1002246	1	02-Mar-10	Schedule (i)	7.5	0.834	0.769	2.19	30	-S9	23	9	66	2	1.79	16.76	19	0	76	5	1.86	16.13
5	1	1002246	2	09-Mar-10	Schedule (i)	0	0	0	0	30	-S9	1	2	84	13	2.12	14.15	1	1	82	16	2.15	13.95
5	1	1002246	2	09-Mar-10	Schedule (i)	1	0.111	0.103	0.267	30	-S9	3	3	85	9	2.06	14.56	5	1	84	10	2.05	14.63
5	1	1002246	2	09-Mar-10	Schedule (i)	2.5	0.278	0.257	0.667	30	-S9	5	3	85	7	2.02	14.85	6	0	86	8	2.02	14.85
5	1	1002246	2	09-Mar-10	Schedule (i)	3.75	0.417	0.385	1.00	30	-S9	11	3	80	6	1.95	15.38	9	3	81	7	1.98	15.15
5	1	1002246	2	09-Mar-10	Schedule (i)	5	0.556	0.513	1.33	30	-S9	12	0	85	3	1.91	15.71	13	1	80	6	1.93	15.54
5	1	1002246	2	09-Mar-10	Schedule (i)	7.5	0.834	0.770	2.00	30	-S9	15	2	82	1	1.86	16.13	18	1	76	5	1.87	16.04
6	1	1002246	3	16-Mar-10	Schedule (i)	0	0	0	0	30	-S9	3	0	80	17	2.14	14.02	3	0	81	16	2.13	14.08
6	1	1002246	3	16-Mar-10	Schedule (i)	1	0.111	0.103	0.610	30	-S9	5	4	78	13	2.08	14.42	5	1	80	14	2.09	14.35
6	1	1002246	3	16-Mar-10	Schedule (i)	2.5	0.278	0.257	1.53	30	-S9	6	3	81	10	2.04	14.71	9	4	77	10	2.01	14.93
6	1	1002246	3	16-Mar-10	Schedule (i)	3.75	0.417	0.385	2.29	30	-S9	9	5	77	9	2.00	15.00	12	1	79	8	1.96	15.31
6	1	1002246	3	16-Mar-10	Schedule (i)	5	0.556	0.513	3.05	30	-S9	12	6	78	4	1.92	15.63	15	3	74	8	1.93	15.54
6	1	1002246	3	16-Mar-10	Schedule (i)	7.5	0.834	0.770	4.58	30	-S9	20	9	68	3	1.83	16.39	19	2	73	6	1.87	16.04
7	1	1002247	1	23-Mar-10	Schedule (i)	0	0	0	0	30	-S9	3	2	79	16	2.13	14.08	1	3	84	12	2.11	14.22
7	1	1002247	1	23-Mar-10	Schedule (i)	1	0.111	0.106	0.282	30	-S9	4	3	80	13	2.09	14.35	3	2	85	10	2.07	14.49
7	1	1002247	1	23-Mar-10	Schedule (i)	2.5	0.278	0.265	0.705	30	-S9	6	2	82	10	2.04	14.71	5	3	85	7	2.02	14.85
7	1	1002247	1	23-Mar-10	Schedule (i)	3.75	0.417	0.397	1.06	30	-S9	9	5	79	7	1.98	15.15	10	5	77	8	1.98	15.15
7	1	1002247	1	23-Mar-10	Schedule (i)	5	0.556	0.530	1.41	30	-S9	12	7	75	6	1.94	15.46	13	6	75	6	1.93	15.54
7	1	1002247	1	23-Mar-10	Schedule (i)	7.5	0.834	0.795	2.12	30	-S9	16	7	73	4	1.88	15.96	14	7	76	3	1.89	15.87
8	1	1002247	2	25-Mar-10	Schedule (i)	0	0	0	0	30	-S9	3	1	80	16	2.13	14.08	2	0	85	13	2.11	14.22
8	1	1002247	2	25-Mar-10	Schedule (i)	1	0.111	0.106	0.329	30	-S9	3	4	82	11	2.08	14.42	4	2	84	10	2.06	14.56
8	1	1002247	2	25-Mar-10	Schedule (i)	2.5	0.278	0.265	0.823	30	-S9	6	8	77	9	2.03	14.78	5	4	84	7	2.02	14.85
8	1	1002247	2	25-Mar-10	Schedule (i)	3.75	0.417	0.397	1.23	30	-S9	7	6	79	8	2.01	14.93	5	2	89	4	1.99	15.08
8	1	1002247	2	25-Mar-10	Schedule (i)	5	0.556	0.530	1.65	30	-S9	11	4	78	7	1.96	15.31	9	5	84	2	1.93	15.54
8	1	1002247	2	25-Mar-10	Schedule (i)	7.5	0.834	0.795	2.47	30	-S9	15	6	74	5	1.90	15.79	14	8	76	2	1.88	15.96
9	1	1002247	3	30-Mar-10	Schedule (i)	0	0	0	0	30	-S9	1	1	85	13	2.12	14.15	1	0	87	12	2.11	14.22
9	1	1002247	3	30-Mar-10	Schedule (i)	1	0.111	0.106	0.223	30	-S9	6	0	80	14	2.08	14.42	3	1	87	9	2.06	14.56
9	1	1002247	3	30-Mar-10	Schedule (i)	2.5	0.278	0.265	0.559	30	-S9	8	3	78	11	2.03	14.78	7	3	82	8	2.01	14.93
9	1	1002247	3	30-Mar-10	Schedule (i)	3.75	0.417	0.397	0.838	30	-S9	9	4	79	8	1.99	15.08	8	3	84	5	1.97	15.23
9	1	1002247	3	30-Mar-10	Schedule (i)	5	0.556	0.530	1.12	30	-S9	11	8	75	6	1.95	15.38	13	5	77	5	1.92	15.63
9	1	1002247	3	30-Mar-10	Schedule (i)	7.5	0.834	0.795	1.68	30	-S9	15	5	75	5	1.90	15.79	16	7	75	2	1.86	16.13

***In Vitro* Sister Chromatid Exchange Assay of CHO cells with (+) and without (-) S9 Metabolic Activation  
(Cell Scoring per flask)**

Set Number	Run Number	Sample ID	Replicate Number	Assay Date	Treatment Schedule	WT (μL/mL)	ST (mg/mL)	ST-H <sub>2</sub> O (mg/mL)	Nicotine (μg/mL)	Treatment Time (h)	Metabolic Activation	Flask 1						Flask 2					
												Metaphases Scored					AGT (hours)	Metaphases Scored					AGT (hours)
												M1	M1+	M2	M2+	PRI		M1	M1+	M2	M2+	PRI	
1	4	1002241	1	09-Feb-10	Schedule (ii)	0	0	0	0	3	+S9	2	0	88	10	2.08	14.42	1	4	84	11	2.10	14.29
1	4	1002241	1	09-Feb-10	Schedule (ii)	10	1.11	1.07	6.85	3	+S9	3	2	87	8	2.05	14.63	3	1	86	10	2.07	14.49
1	4	1002241	1	09-Feb-10	Schedule (ii)	15	1.67	1.61	10.3	3	+S9	6	3	83	8	2.02	14.85	5	1	86	8	2.03	14.78
1	4	1002241	1	09-Feb-10	Schedule (ii)	20	2.22	2.14	13.7	3	+S9	8	4	82	6	1.98	15.15	5	5	85	5	2.00	15.00
1	4	1002241	1	09-Feb-10	Schedule (ii)	25	2.78	2.68	17.1	3	+S9	13	5	75	7	1.94	15.46	10	2	82	6	1.96	15.31
1	4	1002241	1	09-Feb-10	Schedule (ii)	27.5	3.06	2.95	18.8	3	+S9	11	7	79	3	1.92	15.63	9	5	84	2	1.93	15.54
1	4	1002241	1	09-Feb-10	Schedule (ii)	30	3.33	3.22	20.6	3	+S9	13	9	76	2	1.89	15.87	12	5	81	2	1.90	15.79
2	1	1002241	2	17-Feb-10	Schedule (ii)	0	0	0	0	3	+S9	2	2	83	13	2.11	14.22	4	3	76	17	2.13	14.08
2	1	1002241	2	17-Feb-10	Schedule (ii)	10	1.11	1.07	6.94	3	+S9	3	2	84	11	2.08	14.42	5	1	80	14	2.09	14.35
2	1	1002241	2	17-Feb-10	Schedule (ii)	15	1.67	1.61	10.4	3	+S9	6	3	81	10	2.04	14.71	9	2	76	13	2.04	14.71
2	1	1002241	2	17-Feb-10	Schedule (ii)	20	2.22	2.15	13.9	3	+S9	8	4	81	7	1.99	15.08	10	4	78	8	1.98	15.15
2	1	1002241	2	17-Feb-10	Schedule (ii)	25	2.78	2.68	17.4	3	+S9	9	4	83	4	1.95	15.38	14	1	75	10	1.96	15.31
2	1	1002241	2	17-Feb-10	Schedule (ii)	27.5	3.06	2.95	19.1	3	+S9	12	3	83	2	1.90	15.79	13	5	78	4	1.91	15.71
2	1	1002241	2	17-Feb-10	Schedule (ii)	30	3.34	3.22	20.8	3	+S9	17	3	78	2	1.85	16.22	15	7	75	3	1.88	15.96
3	2	1002241	3	25-Feb-10	Schedule (ii)	0	0	0	0	3	+S9	2	1	80	17	2.15	13.95	0	4	83	13	2.13	14.08
3	2	1002241	3	25-Feb-10	Schedule (ii)	10	1.11	1.07	6.83	3	+S9	4	0	82	14	2.10	14.29	3	1	86	10	2.07	14.49
3	2	1002241	3	25-Feb-10	Schedule (ii)	15	1.67	1.61	10.2	3	+S9	5	2	80	13	2.08	14.42	6	2	83	9	2.03	14.78
3	2	1002241	3	25-Feb-10	Schedule (ii)	20	2.22	2.15	13.7	3	+S9	9	1	77	13	2.04	14.71	7	5	82	6	1.99	15.08
3	2	1002241	3	25-Feb-10	Schedule (ii)	25	2.78	2.68	17.1	3	+S9	11	1	80	8	1.97	15.23	13	7	73	7	1.94	15.46
3	2	1002241	3	25-Feb-10	Schedule (ii)	27.5	3.06	2.95	18.8	3	+S9	15	1	75	9	1.94	15.46	14	12	71	3	1.89	15.87
3	2	1002241	3	25-Feb-10	Schedule (ii)	30	3.34	3.22	20.5	3	+S9	15	3	77	5	1.90	15.79	16	11	70	3	1.87	16.04
1	3	1002242	1	09-Feb-10	Schedule (ii)	0	0	0	0	3	+S9	1	1	84	14	2.13	14.08	3	1	82	14	2.11	14.22
1	3	1002242	1	09-Feb-10	Schedule (ii)	10	1.11	0.563	14.9	3	+S9	4	2	81	13	2.09	14.35	7	0	80	13	2.06	14.56
1	3	1002242	1	09-Feb-10	Schedule (ii)	15	1.67	0.844	22.3	3	+S9	9	7	74	10	2.01	14.93	9	3	77	11	2.02	14.85
1	3	1002242	1	09-Feb-10	Schedule (ii)	20	2.22	1.13	29.7	3	+S9	10	5	76	9	1.99	15.08	9	4	77	10	2.01	14.93
1	3	1002242	1	09-Feb-10	Schedule (ii)	25	2.78	1.41	37.1	3	+S9	15	4	72	9	1.94	15.46	14	2	73	11	1.97	15.23
1	3	1002242	1	09-Feb-10	Schedule (ii)	27.5	3.06	1.55	40.8	3	+S9	16	7	70	7	1.91	15.71	14	5	75	6	1.92	15.63
1	3	1002242	1	09-Feb-10	Schedule (ii)	30	3.33	1.69	44.6	3	+S9	18	5	73	4	1.86	16.13	14	5	77	4	1.90	15.79
2	2	1002242	2	17-Feb-10	Schedule (ii)	0	0	0	0	3	+S9	4	2	82	12	2.08	14.42	1	2	86	11	2.10	14.29
2	2	1002242	2	17-Feb-10	Schedule (ii)	10	1.11	0.563	14.3	3	+S9	6	1	83	10	2.04	14.71	3	4	85	8	2.05	14.63
2	2	1002242	2	17-Feb-10	Schedule (ii)	15	1.67	0.844	21.4	3	+S9	8	2	81	9	2.01	14.93	6	3	82	9	2.03	14.78
2	2	1002242	2	17-Feb-10	Schedule (ii)	20	2.22	1.13	28.6	3	+S9	10	2	81	7	1.97	15.23	9	5	79	7	1.98	15.15
2	2	1002242	2	17-Feb-10	Schedule (ii)	25	2.78	1.41	35.7	3	+S9	11	2	83	4	1.93	15.54	11	6	78	5	1.94	15.46
2	2	1002242	2	17-Feb-10	Schedule (ii)	27.5	3.06	1.55	39.3	3	+S9	11	2	86	1	1.90	15.79	12	6	78	4	1.92	15.63
2	2	1002242	2	17-Feb-10	Schedule (ii)	30	3.33	1.69	42.8	3	+S9	15	3	81	1	1.86	16.13	17	5	74	4	1.87	16.04
3	1	1002242	3	25-Feb-10	Schedule (ii)	0	0	0	0	3	+S9	1	1	80	18	2.17	13.82	1	2	85	12	2.11	14.22
3	1	1002242	3	25-Feb-10	Schedule (ii)	10	1.11	0.563	14.4	3	+S9	3	2	80	15	2.12	14.15	3	2	85	10	2.07	14.49
3	1	1002242	3	25-Feb-10	Schedule (ii)	15	1.67	0.844	21.5	3	+S9	8	3	78	11	2.03	14.78	5	4	82	9	2.04	14.71
3	1	1002242	3	25-Feb-10	Schedule (ii)	20	2.22	1.13	28.7	3	+S9	11	6	75	8	1.97	15.23	7	3	82	8	2.01	14.93
3	1	1002242	3	25-Feb-10	Schedule (ii)	25	2.78	1.41	35.9	3	+S9	12	9	72	7	1.95	15.38	9	2	81	8	1.99	15.08
3	1	1002242	3	25-Feb-10	Schedule (ii)	27.5	3.06	1.55	39.5	3	+S9	16	7	72	5	1.89	15.87	11	4	81	4	1.93	15.54
3	1	1002242	3	25-Feb-10	Schedule (ii)	30	3.33	1.69	43.1	3	+S9	15	5	77	3	1.88	15.96	14	4	79	3	1.89	15.87

***In Vitro* Sister Chromatid Exchange Assay of CHO cells with (+) and without (-) S9 Metabolic Activation  
(Cell Scoring per flask)**

Set Number	Run Number	Sample ID	Replicate Number	Assay Date	Treatment Schedule	WT (µL/mL)	ST (mg/mL)	ST-H <sub>2</sub> O (mg/mL)	Nicotine (µg/mL)	Treatment Time (h)	Metabolic Activation	Flask 1						Flask 2					
												Metaphases Scored					AGT (hours)	Metaphases Scored					AGT (hours)
												M1	M1+	M2	M2+	PRI		M1	M1+	M2	M2+	PRI	
1	2	1002243	1	09-Feb-10	Schedule (ii)	0	0	0	0	3	+S9	3	0	84	13	2.10	14 29	2	0	84	14	2.12	14.15
1	2	1002243	1	09-Feb-10	Schedule (ii)	10	1.11	1 01	2.85	3	+S9	5	1	84	10	2.05	14 63	4	1	84	11	2.07	14.49
1	2	1002243	1	09-Feb-10	Schedule (ii)	15	1.67	1 51	4.27	3	+S9	6	5	82	7	2.01	14 93	7	3	80	10	2.03	14.78
1	2	1002243	1	09-Feb-10	Schedule (ii)	20	2.22	2 01	5.70	3	+S9	11	7	76	6	1.95	15 38	13	0	77	10	1.97	15.23
1	2	1002243	1	09-Feb-10	Schedule (ii)	25	2.78	2 51	7.12	3	+S9	16	8	68	8	1.92	15 63	14	7	72	7	1.93	15 54
1	2	1002243	1	09-Feb-10	Schedule (ii)	27.5	3.06	2.76	7.83	3	+S9	18	5	71	6	1.88	15 96	16	3	75	6	1.90	15.79
1	2	1002243	1	09-Feb-10	Schedule (ii)	30	3.33	3 02	8.55	3	+S9	21	6	70	3	1.82	16.48	19	4	71	6	1.87	16 04
2	3	1002243	2	17-Feb-10	Schedule (ii)	0	0	0	0	3	+S9	2	1	80	17	2.15	13 95	2	1	79	18	2.16	13 89
2	3	1002243	2	17-Feb-10	Schedule (ii)	10	1.11	1.01	2.83	3	+S9	5	0	80	15	2.10	14 29	4	2	78	16	2.12	14.15
2	3	1002243	2	17-Feb-10	Schedule (ii)	15	1.67	1.51	4.25	3	+S9	8	2	77	13	2.05	14 63	7	3	77	13	2.06	14 56
2	3	1002243	2	17-Feb-10	Schedule (ii)	20	2.22	2.01	5.67	3	+S9	9	3	79	9	2.00	15 00	13	8	70	9	1.96	15 31
2	3	1002243	2	17-Feb-10	Schedule (ii)	25	2.78	2.51	7.08	3	+S9	13	2	77	8	1.95	15 38	16	10	67	7	1.91	15.71
2	3	1002243	2	17-Feb-10	Schedule (ii)	27.5	3.06	2.76	7.79	3	+S9	16	1	75	8	1.92	15 63	14	5	77	4	1.90	15.79
2	3	1002243	2	17-Feb-10	Schedule (ii)	30	3.33	3.02	8.50	3	+S9	19	0	73	8	1.89	15 87	21	10	66	3	1.82	16.48
3	3	1002243	3	25-Feb-10	Schedule (ii)	0	0	0	0	3	+S9	3	1	78	18	2.15	13 95	2	4	81	13	2.11	14 22
3	3	1002243	3	25-Feb-10	Schedule (ii)	10	1.11	1 01	2.82	3	+S9	6	2	79	13	2.07	14.49	5	3	82	10	2.05	14 63
3	3	1002243	3	25-Feb-10	Schedule (ii)	15	1.67	1 51	4.22	3	+S9	8	1	80	11	2.03	14.78	8	1	83	8	2.00	15 00
3	3	1002243	3	25-Feb-10	Schedule (ii)	20	2.22	2 01	5.63	3	+S9	12	1	75	12	2.00	15 00	9	3	81	7	1.98	15.15
3	3	1002243	3	25-Feb-10	Schedule (ii)	25	2.78	2 51	7.04	3	+S9	14	0	78	8	1.94	15.46	11	3	80	6	1.95	15 38
3	3	1002243	3	25-Feb-10	Schedule (ii)	27.5	3.06	2.77	7.74	3	+S9	14	0	80	6	1.92	15 63	12	4	79	5	1.93	15 54
3	3	1002243	3	25-Feb-10	Schedule (ii)	30	3.33	3 02	8.45	3	+S9	16	0	79	5	1.89	15 87	13	2	82	3	1.90	15.79
4	1	1002244	1	04-Mar-10	Schedule (ii)	0	0	0	0	3	+S9	2	0	82	16	2.14	14 02	2	1	80	17	2.15	13 95
4	1	1002244	1	04-Mar-10	Schedule (ii)	10	1.11	0.514	14.2	3	+S9	3	2	83	12	2.09	14 35	6	0	81	13	2.07	14.49
4	1	1002244	1	04-Mar-10	Schedule (ii)	15	1.67	0.771	21.2	3	+S9	7	3	80	10	2.03	14.78	7	1	81	11	2.04	14.71
4	1	1002244	1	04-Mar-10	Schedule (ii)	20	2.22	1 03	28.3	3	+S9	10	9	75	6	1.96	15 31	12	0	78	10	1.98	15.15
4	1	1002244	1	04-Mar-10	Schedule (ii)	25	2.78	1 28	35.4	3	+S9	14	9	74	3	1.89	15 87	15	2	73	10	1.95	15 38
4	1	1002244	1	04-Mar-10	Schedule (ii)	27.5	3.06	1.41	38.9	3	+S9	20	8	64	8	1.88	15 96	14	5	76	5	1.91	15.71
4	1	1002244	1	04-Mar-10	Schedule (ii)	30	3.34	1 54	42.5	3	+S9	21	9	66	4	1.83	16 39	17	2	77	4	1.87	16 04
5	2	1002244	2	11-Mar-10	Schedule (ii)	0	0	0	0	3	+S9	2	0	82	16	2.14	14 02	2	0	85	13	2.11	14 22
5	2	1002244	2	11-Mar-10	Schedule (ii)	10	1.11	0.514	14.5	3	+S9	7	2	77	14	2.07	14.49	3	3	85	9	2.06	14 56
5	2	1002244	2	11-Mar-10	Schedule (ii)	15	1.67	0.770	21.8	3	+S9	10	4	77	9	1.99	15 08	5	4	85	6	2.01	14 93
5	2	1002244	2	11-Mar-10	Schedule (ii)	20	2.22	1 03	29.0	3	+S9	13	7	75	5	1.92	15 63	8	2	84	6	1.98	15.15
5	2	1002244	2	11-Mar-10	Schedule (ii)	25	2.78	1 28	36.3	3	+S9	12	7	76	5	1.93	15 54	11	3	81	5	1.94	15.46
5	2	1002244	2	11-Mar-10	Schedule (ii)	27.5	3.06	1.41	39.9	3	+S9	18	3	78	3	1.89	15 87	12	4	82	2	1.90	15.79
5	2	1002244	2	11-Mar-10	Schedule (ii)	30	3.33	1 54	43.6	3	+S9	17	5	76	2	1.85	16 22	13	6	81	0	1.87	16 04
6	3	1002244	3	18-Mar-10	Schedule (ii)	0	0	0	0	3	+S9	1	0	89	10	2.09	14 35	2	1	83	14	2.12	14.15
6	3	1002244	3	18-Mar-10	Schedule (ii)	10	1.11	0.514	15.0	3	+S9	3	0	88	9	2.06	14 56	3	3	84	10	2.07	14.49
6	3	1002244	3	18-Mar-10	Schedule (ii)	15	1.67	0.771	22.5	3	+S9	6	2	87	5	1.99	15 08	4	1	84	11	2.07	14.49
6	3	1002244	3	18-Mar-10	Schedule (ii)	20	2.22	1 03	30.0	3	+S9	9	3	82	6	1.97	15 23	7	3	84	6	1.99	15 08
6	3	1002244	3	18-Mar-10	Schedule (ii)	25	2.78	1 28	37.5	3	+S9	12	5	79	4	1.92	15 63	11	1	82	6	1.95	15 38
6	3	1002244	3	18-Mar-10	Schedule (ii)	27.5	3.06	1.41	41.3	3	+S9	13	4	81	2	1.89	15 87	15	1	80	4	1.89	15 87
6	3	1002244	3	18-Mar-10	Schedule (ii)	30	3.34	1 54	45.0	3	+S9	14	7	78	1	1.87	16 04	17	3	78	2	1.85	16 22

***In Vitro* Sister Chromatid Exchange Assay of CHO cells with (+) and without (-) S9 Metabolic Activation  
(Cell Scoring per flask)**

Set Number	Run Number	Sample ID	Replicate Number	Assay Date	Treatment Schedule	WT (μL/mL)	ST (mg/mL)	ST-H <sub>2</sub> O (mg/mL)	Nicotine (μg/mL)	Treatment Time (h)	Metabolic Activation	Flask 1						Flask 2					
												Metaphases Scored					AGT (hours)	Metaphases Scored					AGT (hours)
												M1	M1+	M2	M2+	PRI		M1	M1+	M2	M2+	PRI	
4	3	1002245	1	04-Mar-10	Schedule (ii)	0	0	0	0	3	+S9	3	0	83	14	2.11	14 22	1	0	86	13	2.12	14.15
4	3	1002245	1	04-Mar-10	Schedule (ii)	10	1.11	0.782	12.3	3	+S9	5	4	81	10	2.05	14 63	4	2	84	10	2.06	14 56
4	3	1002245	1	04-Mar-10	Schedule (ii)	15	1.67	1.17	18.4	3	+S9	7	2	80	11	2.04	14.71	6	3	82	9	2.03	14.78
4	3	1002245	1	04-Mar-10	Schedule (ii)	20	2.22	1.56	24.5	3	+S9	12	0	79	9	1.97	15 23	8	3	81	8	2.00	15 00
4	3	1002245	1	04-Mar-10	Schedule (ii)	25	2.78	1.95	30.6	3	+S9	13	3	76	8	1.95	15 38	11	2	79	8	1.97	15 23
4	3	1002245	1	04-Mar-10	Schedule (ii)	27.5	3.06	2.15	33.7	3	+S9	15	2	76	7	1.92	15 63	11	2	82	5	1.94	15.46
4	3	1002245	1	04-Mar-10	Schedule (ii)	30	3.34	2.35	36.8	3	+S9	16	1	76	7	1.91	15.71	13	4	80	3	1.90	15.79
5	3	1002245	2	11-Mar-10	Schedule (ii)	0	0	0	0	3	+S9	3	2	81	14	2.11	14 22	2	2	81	15	2.13	14 08
5	3	1002245	2	11-Mar-10	Schedule (ii)	10	1.11	0.782	11.4	3	+S9	6	2	81	11	2.05	14 63	4	0	82	14	2.10	14 29
5	3	1002245	2	11-Mar-10	Schedule (ii)	15	1.67	1.17	17.1	3	+S9	9	2	79	10	2.01	14 93	7	1	80	12	2.05	14 63
5	3	1002245	2	11-Mar-10	Schedule (ii)	20	2.22	1.56	22.8	3	+S9	9	2	81	8	1.99	15 08	12	0	78	10	1.98	15.15
5	3	1002245	2	11-Mar-10	Schedule (ii)	25	2.78	1.95	28.5	3	+S9	12	3	78	7	1.95	15 38	13	3	77	7	1.94	15.46
5	3	1002245	2	11-Mar-10	Schedule (ii)	27.5	3.06	2.15	31.3	3	+S9	14	7	74	5	1.91	15.71	16	1	75	8	1.92	15 63
5	3	1002245	2	11-Mar-10	Schedule (ii)	30	3.33	2.34	34.2	3	+S9	16	10	71	3	1.87	16 04	16	2	77	5	1.89	15 87
6	2	1002245	3	18-Mar-10	Schedule (ii)	0	0	0	0	3	+S9	2	1	82	15	2.13	14 08	1	0	86	13	2.12	14.15
6	2	1002245	3	18-Mar-10	Schedule (ii)	10	1.11	0.782	11.6	3	+S9	3	5	80	12	2.09	14 35	3	3	85	9	2.06	14 56
6	2	1002245	3	18-Mar-10	Schedule (ii)	15	1.67	1.17	17.4	3	+S9	5	8	78	9	2.04	14.71	5	3	85	7	2.02	14 85
6	2	1002245	3	18-Mar-10	Schedule (ii)	20	2.22	1.56	23.1	3	+S9	9	4	79	8	1.99	15 08	8	2	84	6	1.98	15.15
6	2	1002245	3	18-Mar-10	Schedule (ii)	25	2.78	1.95	28.9	3	+S9	10	7	76	7	1.97	15 23	11	2	81	6	1.95	15 38
6	2	1002245	3	18-Mar-10	Schedule (ii)	27.5	3.06	2.15	31.8	3	+S9	13	6	76	5	1.92	15 63	11	4	82	3	1.92	15 63
6	2	1002245	3	18-Mar-10	Schedule (ii)	30	3.34	2.35	34.7	3	+S9	13	4	81	2	1.89	15 87	12	7	81	0	1.88	15 96
4	2	1002246	1	04-Mar-10	Schedule (ii)	0	0	0	0	3	+S9	2	2	81	15	2.13	14 08	4	2	80	14	2.10	14 29
4	2	1002246	1	04-Mar-10	Schedule (ii)	10	1.11	1.03	2.92	3	+S9	4	2	84	10	2.06	14 56	6	4	79	11	2.05	14 63
4	2	1002246	1	04-Mar-10	Schedule (ii)	15	1.67	1.54	4.38	3	+S9	8	2	81	9	2.01	14 93	6	7	79	8	2.02	14 85
4	2	1002246	1	04-Mar-10	Schedule (ii)	20	2.22	2.05	5.84	3	+S9	9	3	80	8	1.99	15 08	8	7	79	6	1.98	15.15
4	2	1002246	1	04-Mar-10	Schedule (ii)	25	2.78	2.56	7.30	3	+S9	10	4	80	6	1.96	15 31	15	2	73	10	1.95	15 38
4	2	1002246	1	04-Mar-10	Schedule (ii)	27.5	3.06	2.82	8.03	3	+S9	13	2	80	5	1.92	15 63	16	5	72	7	1.91	15.71
4	2	1002246	1	04-Mar-10	Schedule (ii)	30	3.33	3.08	8.76	3	+S9	16	3	77	4	1.88	15 96	18	7	70	5	1.87	16 04
5	1	1002246	2	11-Mar-10	Schedule (ii)	0	0	0	0	3	+S9	1	0	84	15	2.14	14 02	2	0	86	12	2.10	14 29
5	1	1002246	2	11-Mar-10	Schedule (ii)	10	1.11	1.03	2.67	3	+S9	6	3	80	11	2.05	14 63	5	3	81	11	2.06	14 56
5	1	1002246	2	11-Mar-10	Schedule (ii)	15	1.67	1.54	4.00	3	+S9	9	6	77	8	1.99	15 08	7	2	83	8	2.01	14 93
5	1	1002246	2	11-Mar-10	Schedule (ii)	20	2.22	2.05	5.34	3	+S9	12	8	74	6	1.94	15.46	13	4	75	8	1.95	15 38
5	1	1002246	2	11-Mar-10	Schedule (ii)	25	2.78	2.57	6.67	3	+S9	13	6	77	4	1.91	15.71	16	5	73	6	1.90	15.79
5	1	1002246	2	11-Mar-10	Schedule (ii)	27.5	3.06	2.82	7.34	3	+S9	14	4	80	2	1.88	15 96	17	7	71	5	1.88	15 96
5	1	1002246	2	11-Mar-10	Schedule (ii)	30	3.34	3.08	8.01	3	+S9	17	7	72	4	1.87	16 04	19	6	72	3	1.84	16 30
6	1	1002246	3	18-Mar-10	Schedule (ii)	0	0	0	0	3	+S9	3	0	84	13	2.10	14 29	5	2	79	14	2.09	14 35
6	1	1002246	3	18-Mar-10	Schedule (ii)	10	1.11	1.03	6.10	3	+S9	4	2	83	11	2.07	14.49	6	2	81	11	2.05	14 63
6	1	1002246	3	18-Mar-10	Schedule (ii)	15	1.67	1.54	9.15	3	+S9	6	5	81	8	2.02	14 85	8	3	80	9	2.01	14 93
6	1	1002246	3	18-Mar-10	Schedule (ii)	20	2.22	2.05	12.2	3	+S9	10	6	79	5	1.95	15 38	11	5	76	8	1.97	15 23
6	1	1002246	3	18-Mar-10	Schedule (ii)	25	2.78	2.57	15.3	3	+S9	13	5	78	4	1.91	15.71	12	6	77	5	1.93	15 54
6	1	1002246	3	18-Mar-10	Schedule (ii)	27.5	3.06	2.82	16.8	3	+S9	16	7	73	4	1.88	15 96	14	6	76	4	1.90	15.79
6	1	1002246	3	18-Mar-10	Schedule (ii)	30	3.34	3.08	18.3	3	+S9	20	7	71	2	1.82	16.48	15	6	77	2	1.87	16 04

***In Vitro* Sister Chromatid Exchange Assay of CHO cells with (+) and without (-) S9 Metabolic Activation  
(Cell Scoring per flask)**

Set Number	Run Number	Sample ID	Replicate Number	Assay Date	Treatment Schedule	WT ( $\mu$ L/mL)	ST (mg/mL)	ST-H <sub>2</sub> O (mg/mL)	Nicotine ( $\mu$ g/mL)	Treatment Time (h)	Metabolic Activation	Flask 1						Flask 2					
												Metaphases Scored					AGT	Metaphases Scored					AGT
												M1	M1+	M2	M2+	PRI	(hours)	M1	M1+	M2	M2+	PRI	(hours)
7	1	1002247	1	24-Mar-10	Schedule (ii)	0	0	0	0	3	+S9	2	4	80	14	2.12	14.15	1	1	81	17	2.16	13.89
7	1	1002247	1	24-Mar-10	Schedule (ii)	10	1.11	1.06	2.82	3	+S9	3	1	85	11	2.08	14.42	3	0	83	14	2.11	14.22
7	1	1002247	1	24-Mar-10	Schedule (ii)	15	1.67	1.59	4.23	3	+S9	5	3	84	8	2.03	14.78	9	1	80	10	2.01	14.93
7	1	1002247	1	24-Mar-10	Schedule (ii)	20	2.22	2.12	5.64	3	+S9	8	2	84	6	1.98	15.15	12	1	78	9	1.97	15.23
7	1	1002247	1	24-Mar-10	Schedule (ii)	25	2.78	2.65	7.05	3	+S9	11	2	81	6	1.95	15.38	12	4	79	5	1.93	15.54
7	1	1002247	1	24-Mar-10	Schedule (ii)	27.5	3.06	2.91	7.76	3	+S9	11	4	82	3	1.92	15.63	15	6	73	6	1.91	15.71
7	1	1002247	1	24-Mar-10	Schedule (ii)	30	3.33	3.18	8.46	3	+S9	14	9	75	2	1.88	15.96	18	0	75	7	1.89	15.87
8	1	1002247	2	25-Mar-10	Schedule (ii)	0	0	0	0	3	+S9	5	0	80	15	2.10	14.29	2	0	83	15	2.13	14.08
8	1	1002247	2	25-Mar-10	Schedule (ii)	10	1.11	1.06	3.29	3	+S9	5	2	81	12	2.07	14.49	4	3	80	13	2.09	14.35
8	1	1002247	2	25-Mar-10	Schedule (ii)	15	1.67	1.59	4.94	3	+S9	7	4	79	10	2.03	14.78	6	4	81	9	2.03	14.78
8	1	1002247	2	25-Mar-10	Schedule (ii)	20	2.22	2.12	6.58	3	+S9	9	2	79	10	2.01	14.93	7	3	84	6	1.99	15.08
8	1	1002247	2	25-Mar-10	Schedule (ii)	25	2.78	2.65	8.23	3	+S9	12	1	80	7	1.95	15.38	10	6	79	5	1.95	15.38
8	1	1002247	2	25-Mar-10	Schedule (ii)	27.5	3.06	2.91	9.05	3	+S9	15	2	75	8	1.93	15.54	11	7	79	3	1.92	15.63
8	1	1002247	2	25-Mar-10	Schedule (ii)	30	3.33	3.18	9.87	3	+S9	18	4	70	8	1.90	15.79	13	9	76	2	1.89	15.87
9	1	1002247	3	30-Mar-10	Schedule (ii)	0	0	0	0	3	+S9	1	0	87	12	2.11	14.22	2	1	83	14	2.12	14.15
9	1	1002247	3	30-Mar-10	Schedule (ii)	10	1.11	1.06	2.23	3	+S9	3	2	86	9	2.06	14.56	3	3	84	10	2.07	14.49
9	1	1002247	3	30-Mar-10	Schedule (ii)	15	1.67	1.59	3.35	3	+S9	6	2	83	9	2.03	14.78	6	2	84	8	2.02	14.85
9	1	1002247	3	30-Mar-10	Schedule (ii)	20	2.22	2.12	4.47	3	+S9	6	5	82	7	2.01	14.93	7	3	85	5	1.98	15.15
9	1	1002247	3	30-Mar-10	Schedule (ii)	25	2.78	2.65	5.59	3	+S9	8	5	82	5	1.97	15.23	9	3	84	4	1.95	15.38
9	1	1002247	3	30-Mar-10	Schedule (ii)	27.5	3.06	2.91	6.15	3	+S9	11	6	80	3	1.92	15.63	10	6	81	3	1.93	15.54
9	1	1002247	3	30-Mar-10	Schedule (ii)	30	3.33	3.18	6.70	3	+S9	14	8	76	2	1.88	15.96	17	9	72	2	1.85	16.22



### Limits of Detection (LOD) and Limits of Quantification (LOQ) Determined for Selected Constituents in Processed Tobacco

Health Canada Method	Analyte	Units	Processed Tobacco	
			LOD	LOQ
Alkaloids				
T-301	Nicotine	µg/g (dry wt)	75.0	250
T-301	Nornicotine	µg/g (dry wt)	15.0	50.0
T-301	Anabasine	µg/g (dry wt)	15.0	50.0
T-301	Myosmine	µg/g (dry wt)	15.0	50.0
T-301	Anatabine	µg/g (dry wt)	15.0	50.0

Abbreviations: BDL, below detection limit; NQ, below quantitation limit; N/A, not applicable

Date of last review: January 29, 2010

NOTE: The above limits referred to samples processed as required by the referenced Health Canada Method (ie. either "as received" or "dried"). Corrections for the moisture content, determined independently, must be applied where applicable in order to convert the "as received" limits to limits expressed on a "dry weight" basis.

\*NOTE: The LOD and LOQ are based on the lowest standard concentration used for calibration of the instruments as referenced in the Health Canada Method.

LOD Definition: The limit of detection (LOD) for a particular analyte is a statistically defined decision point that, with a specified probability, measured results falling at or above this point are interpreted to indicate an analyte concentration greater than zero within the sample.

LOQ Definition: The limit of quantification for a particular analyte is another statistically defined decision point that results falling at or above this point can be assigned a statistically significant numerical value with an associated level of precision. Values falling between the LOD and LOQ are interpreted as a positive but not quantifiable result for the analyte in question.

Matrix Code	Sample ID	Nicotine [µg/g]				Nornicotine [µg/g]				Anabasine [µg/g]			
		Average	St Dev	L. Limit (95%)	U. Limit (95%)	Average	St Dev	L. Limit (95%)	U. Limit (95%)	Average	St Dev	L. Limit (95%)	U. Limit (95%)
WT	1002241	5589	318	4799	6380	104	5	91.1	117	NQ	NQ	N/A	N/A
WT	1002242	25032	1276	21861	28203	215	13	182	248	105	3	97.6	113
WT	1002243	2464	131	2140	2789	57.1	8.0	37.3	76.9	NQ	NQ	N/A	N/A
WT	1002244	28135	472	26963	29307	208	9	185	231	108	4	97.0	119
WT	1002245	15257	554	13881	16632	158	4	147	168	76.2	2.0	71.1	81.2
WT	1002246	4762	454	3633	5890	155	24	94.9	215	NQ	NQ	N/A	N/A
WT	1002247	2405	44	2295	2514	NQ	NQ	N/A	N/A	NQ	NQ	N/A	N/A
WT	1002248	19878	1444	16291	23465	794	91	568	1019	105	3	96.1	113

Matrix Code	Sample ID	Myosmine [µg/g]				Anatabine [µg/g]			
		Average	St Dev	L. Limit (95%)	U. Limit (95%)	Average	St Dev	L. Limit (95%)	U. Limit (95%)
WT	1002241	BDL	BDL	N/A	N/A	183	6	168	198
WT	1002242	NQ	NQ	N/A	N/A	283	17	242	325
WT	1002243	BDL	BDL	N/A	N/A	131	2	126	137
WT	1002244	BDL	BDL	N/A	N/A	331	5	318	344
WT	1002245	NQ	NQ	N/A	N/A	130	7	114	147
WT	1002246	BDL	BDL	N/A	N/A	158	6	144	173
WT	1002247	BDL	BDL	N/A	N/A	91.9	1.5	88.2	95.5
WT	1002248	NQ	NQ	N/A	N/A	634	30	559	709

Matrix Code	Sample ID	Dry Matter (%)				Moisture (%)			
		Average	St Dev	L. Limit (95%)	U. Limit (95%)	Average	St Dev	L. Limit (95%)	U. Limit (95%)
WT	1002241	96.5	0.0	96.4	96.5	3.53	0.01	3.51	3.55
WT	1002242	50.6	0.1	50.5	50.8	49.4	0.1	49.2	49.5
WT	1002243	90.5	0.0	90.4	90.6	9.53	0.05	9.42	9.64
WT	1002244	46.2	0.1	46.1	46.3	53.8	0.1	53.7	53.9
WT	1002245	70.3	0.1	70.0	70.6	29.7	0.1	29.4	30.0
WT	1002246	92.3	0.1	92.1	92.4	7.72	0.05	7.58	7.85
WT	1002247	95.3	0.0	95.3	95.4	4.65	0.01	4.63	4.67
WT	1002248	88.1	0.1	87.9	88.3	11.9	0.1	11.7	12.1

**Glossary of Abbreviations**

BDL: Below the Limit of Detection

NQ: Below the Limit of Quantification

N/A: Not Applicable

L. Limit (95%): lower limit of the 95% confidence interval

U. Limit (95%): upper limit of the 95% confidence interval

**Table 1: Nicotine and Nicotine Related Contents of Processed Tobacco ('Dry Weight' Basis)**

<b>Sample ID</b>	<b>Nicotine [µg/g]</b>	<b>Nornicotine [µg/g]</b>	<b>Anabasine [µg/g]</b>	<b>Myosmine [µg/g]</b>	<b>Anatabine [µg/g]</b>
1002241	5851	107	< 50.0 but ≥ 15.0	< 15.0	187
1002241	5235	98.0	< 50.0 but ≥ 15.0	< 15.0	176
1002241	5682	106	< 50.0 but ≥ 15.0	< 15.0	185
<b>Average</b>	5589	104	<b>NQ</b>	<b>BDL</b>	183
<b>Std. Dev.</b>	318	5	<b>NQ</b>	<b>BDL</b>	6
<b>L. Limit (95%)</b>	4799	91	N/A	N/A	168
<b>U. Limit (95%)</b>	6380	117	N/A	N/A	198
1002242	23692	230	102	< 50.0 but ≥ 15.0	264
1002242	26234	207	108	< 50.0 but ≥ 15.0	292
1002242	25169	208	106	< 50.0 but ≥ 15.0	294
<b>Average</b>	25032	215	105	<b>NQ</b>	283
<b>Std. Dev.</b>	1276	13	3	<b>NQ</b>	17
<b>L. Limit (95%)</b>	21861	182	98	N/A	242
<b>U. Limit (95%)</b>	28203	248	113	N/A	325
1002243	2566	55.1	< 50.0 but ≥ 15.0	< 15.0	132
1002243	2510	50.4	< 50.0 but ≥ 15.0	< 15.0	129
1002243	2317	65.9	< 50.0 but ≥ 15.0	< 15.0	133
<b>Average</b>	2464	57.1	<b>NQ</b>	<b>BDL</b>	131
<b>Std. Dev.</b>	131	8.0	<b>NQ</b>	<b>BDL</b>	2
<b>L. Limit (95%)</b>	2140	37.3	N/A	N/A	126
<b>U. Limit (95%)</b>	2789	76.9	N/A	N/A	137
1002244	27591	198	103	< 15.0	325
1002244	28416	215	110	< 15.0	333
1002244	28399	211	111	< 15.0	334
<b>Average</b>	28135	208	108	<b>BDL</b>	331
<b>Std. Dev.</b>	472	9	4	<b>BDL</b>	5
<b>L. Limit (95%)</b>	26963	185	97	N/A	318
<b>U. Limit (95%)</b>	29307	231	119	N/A	344
1002245	14624	162	74.6	< 50.0 but ≥ 15.0	125
1002245	15491	156	75.3	< 50.0 but ≥ 15.0	128
1002245	15655	154	78.5	< 50.0 but ≥ 15.0	138
<b>Average</b>	15257	158	76.2	<b>NQ</b>	130
<b>Std. Dev.</b>	554	4	2.0	<b>NQ</b>	7
<b>L. Limit (95%)</b>	13881	147	71.1	N/A	114
<b>U. Limit (95%)</b>	16632	168	81.2	N/A	147

**Table 1: Nicotine and Nicotine Related Contents of Processed Tobacco ('Dry Weight' Basis)**

<b>Sample ID</b>	<b>Nicotine [µg/g]</b>	<b>Nornicotine [µg/g]</b>	<b>Anabasine [µg/g]</b>	<b>Myosmine [µg/g]</b>	<b>Anatabine [µg/g]</b>
1002246	4468	137	< 50.0 but ≥ 15.0	< 15.0	153
1002246	4533	145	< 50.0 but ≥ 15.0	< 15.0	157
1002246	5285	183	< 50.0 but ≥ 15.0	< 15.0	165
<b>Average</b>	4762	155	<b>NQ</b>	<b>BDL</b>	158
<b>Std. Dev.</b>	454	24	<b>NQ</b>	<b>BDL</b>	6
<b>L. Limit (95%)</b>	3633	95	N/A	N/A	144
<b>U. Limit (95%)</b>	5890	215	N/A	N/A	173
1002247	2413	< 50.0 but ≥ 15.0	< 50.0 but ≥ 15.0	< 15.0	92.8
1002247	2444	< 50.0 but ≥ 15.0	< 50.0 but ≥ 15.0	< 15.0	92.7
1002247	2357	< 50.0 but ≥ 15.0	< 50.0 but ≥ 15.0	< 15.0	90.2
<b>Average</b>	2405	<b>NQ</b>	<b>NQ</b>	<b>BDL</b>	91.9
<b>Std. Dev.</b>	44	<b>NQ</b>	<b>NQ</b>	<b>BDL</b>	1.5
<b>L. Limit (95%)</b>	2295	N/A	N/A	N/A	88.2
<b>U. Limit (95%)</b>	2514	N/A	N/A	N/A	95.5
1002248	18321	821	101	< 50.0 but ≥ 15.0	603
1002248	20139	868	106	< 50.0 but ≥ 15.0	637
1002248	21174	692	107	< 50.0 but ≥ 15.0	663
<b>Average</b>	19878	794	105	<b>NQ</b>	634
<b>Std. Dev.</b>	1444	91	3	<b>NQ</b>	30
<b>L. Limit (95%)</b>	16291	568	96	N/A	559
<b>U. Limit (95%)</b>	23465	1019	113	N/A	709

Glossary of Abbreviations

**BDL:** Below the Limit of Detection

**NQ:** Below the Limit of Quantification

**N/A:** Not Applicable

**Table 13: Moisture Content of Processed Tobacco**

<b>Sample ID</b>	<b>Dry Matter (%)</b>	<b>Moisture (%)</b>
1002241	96.5	3.53
1002241	96.5	3.54
1002241	96.5	3.52
<b>Average</b>	96.5	3.53
<b>Std. Dev.</b>	0.0	0.01
<b>L. Limit (95%)</b>	96.4	3.51
<b>U. Limit (95%)</b>	96.5	3.55
1002242	50.6	49.4
1002242	50.7	49.3
1002242	50.6	49.4
<b>Average</b>	50.6	49.4
<b>Std. Dev.</b>	0.1	0.1
<b>L. Limit (95%)</b>	50.5	49.2
<b>U. Limit (95%)</b>	50.8	49.5
1002243	90.4	9.58
1002243	90.5	9.50
1002243	90.5	9.50
<b>Average</b>	90.5	9.53
<b>Std. Dev.</b>	0.0	0.05
<b>L. Limit (95%)</b>	90.4	9.42
<b>U. Limit (95%)</b>	90.6	9.64
1002244	46.2	53.8
1002244	46.2	53.8
1002244	46.3	53.7
<b>Average</b>	46.2	53.8
<b>Std. Dev.</b>	0.1	0.1
<b>L. Limit (95%)</b>	46.1	53.7
<b>U. Limit (95%)</b>	46.3	53.9
1002245	70.2	29.8
1002245	70.5	29.5
1002245	70.3	29.7
<b>Average</b>	70.3	29.7
<b>Std. Dev.</b>	0.1	0.1
<b>L. Limit (95%)</b>	70.0	29.4
<b>U. Limit (95%)</b>	70.6	30.0

**Table 13: Moisture Content of Processed Tobacco**

<b>Sample ID</b>	<b>Dry Matter (%)</b>	<b>Moisture (%)</b>
1002246	92.2	7.77
1002246	92.3	7.67
1002246	92.3	7.72
<b>Average</b>	92.3	7.72
<b>Std. Dev.</b>	0.1	0.05
<b>L. Limit (95%)</b>	92.1	7.58
<b>U. Limit (95%)</b>	92.4	7.85
1002247	95.4	4.65
1002247	95.3	4.66
1002247	95.4	4.65
<b>Average</b>	95.3	4.65
<b>Std. Dev.</b>	0.0	0.01
<b>L. Limit (95%)</b>	95.3	4.63
<b>U. Limit (95%)</b>	95.4	4.67
1002248	88.0	12.0
1002248	88.0	12.0
1002248	88.2	11.8
<b>Average</b>	88.1	11.9
<b>Std. Dev.</b>	0.1	0.1
<b>L. Limit (95%)</b>	87.9	11.7
<b>U. Limit (95%)</b>	88.3	12.1

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Project: M125

Period: February 1 - 5, 2010

**Smoking Data<sup>†</sup> for *In Vitro* Sister Chromatid Exchange Assay**

Smoking Condition <sup>†</sup>	Set Number	Run Number	Sample ID	Replicate Number	Smoking Date	Cigarettes Smoked	Puff Count (per cig)	Weight of MS TPM (mg) <sup>1</sup>	Smoking Machine
FTC	1	1	control	1	01-Feb-10	20	8.8	197	Borgwaldt Rotary
FTC	2	1	control	2	04-Feb-10	20	8.9	197	Borgwaldt Rotary
FTC	3	1	control	3	05-Feb-10	20	8.8	181	Borgwaldt Rotary

<sup>†</sup> Samples generated under 'FTC' smoking conditions:

35mL puff volume; 60 second interval; 2 second duration; no vent blocking.

<sup>1</sup> Samples extracted in DMSO to give a final concentration of 10.0 mg/ml.

***In Vitro* Sister Chromatid Exchange Assay of CHO cells with (+) and without (-) S9 Metabolic Activation  
(Observations per flask)**

Smoking Condition	Set Number	Run Number	Sample ID	Replicate Number	Assay Date	Treatment Schedule	TPM (µg/mL)	Treatment Time (h)	Metabolic Activation	Cell Counts (Flask 1)			SCE's per Cell/Chromosome	
										# of Cells	# of SCE	Number of chromosomes	SCE per Cell Flask 1	SCE per Chromosome Flask 1
FTC	1	1	control	1	04-Feb-10	Schedule (i)	0	30	-S9	25	163	521	6.52	0.313
FTC	1	1	control	1	04-Feb-10	Schedule (i)	10	30	-S9	25	205	525	8.20	0.390
FTC	1	1	control	1	04-Feb-10	Schedule (i)	25	30	-S9	25	258	523	10.32	0.493
FTC	1	1	control	1	04-Feb-10	Schedule (i)	37.5	30	-S9	25	335	526	13.4	0.637
FTC	1	1	control	1	04-Feb-10	Schedule (i)	50	30	-S9	25	409	524	16.4	0.781
FTC	1	1	control	1	04-Feb-10	Schedule (i)	75	30	-S9	25	580	526	23.2	1.103
FTC	2	1	control	1	11-Feb-10	Schedule (i)	0	30	-S9	25	158	515	6.32	0.307
FTC	2	1	control	1	11-Feb-10	Schedule (i)	10	30	-S9	25	206	514	8.24	0.401
FTC	2	1	control	1	11-Feb-10	Schedule (i)	25	30	-S9	25	260	512	10.40	0.508
FTC	2	1	control	1	11-Feb-10	Schedule (i)	37.5	30	-S9	25	328	517	13.1	0.634
FTC	2	1	control	1	11-Feb-10	Schedule (i)	50	30	-S9	25	405	511	16.2	0.793
FTC	2	1	control	1	11-Feb-10	Schedule (i)	75	30	-S9	25	574	523	23.0	1.098
FTC	3	1	control	1	23-Feb-10	Schedule (i)	0	30	-S9	25	171	517	6.84	0.331
FTC	3	1	control	1	23-Feb-10	Schedule (i)	10	30	-S9	25	223	512	8.92	0.436
FTC	3	1	control	1	23-Feb-10	Schedule (i)	25	30	-S9	25	270	523	10.80	0.516
FTC	3	1	control	1	23-Feb-10	Schedule (i)	37.5	30	-S9	25	339	512	13.6	0.662
FTC	3	1	control	1	23-Feb-10	Schedule (i)	50	30	-S9	25	399	528	16.0	0.756
FTC	3	1	control	1	23-Feb-10	Schedule (i)	75	30	-S9	25	572	512	22.9	1.117
FTC	1	1	control	2	02-Mar-10	Schedule (i)	0	30	-S9	25	164	522	6.56	0.314
FTC	1	1	control	2	02-Mar-10	Schedule (i)	10	30	-S9	25	203	525	8.12	0.387
FTC	1	1	control	2	02-Mar-10	Schedule (i)	25	30	-S9	25	255	524	10.20	0.487
FTC	1	1	control	2	02-Mar-10	Schedule (i)	37.5	30	-S9	25	329	523	13.2	0.629
FTC	1	1	control	2	02-Mar-10	Schedule (i)	50	30	-S9	25	405	525	16.2	0.771
FTC	1	1	control	2	02-Mar-10	Schedule (i)	75	30	-S9	25	550	526	22.0	1.046
FTC	1	1	control	3	09-Mar-10	Schedule (i)	0	30	-S9	25	166	524	6.64	0.317
FTC	1	1	control	3	09-Mar-10	Schedule (i)	10	30	-S9	25	206	525	8.24	0.392
FTC	1	1	control	3	09-Mar-10	Schedule (i)	25	30	-S9	25	260	525	10.40	0.495
FTC	1	1	control	3	09-Mar-10	Schedule (i)	37.5	30	-S9	25	324	525	13.0	0.617
FTC	1	1	control	3	09-Mar-10	Schedule (i)	50	30	-S9	25	392	524	15.7	0.748
FTC	1	1	control	3	09-Mar-10	Schedule (i)	75	30	-S9	25	552	526	22.1	1.049
FTC	2	1	control	2	16-Mar-10	Schedule (i)	0	30	-S9	25	159	512	6.36	0.311
FTC	2	1	control	2	16-Mar-10	Schedule (i)	10	30	-S9	25	204	506	8.16	0.403
FTC	2	1	control	2	16-Mar-10	Schedule (i)	25	30	-S9	25	259	504	10.36	0.514
FTC	2	1	control	2	16-Mar-10	Schedule (i)	37.5	30	-S9	25	330	517	13.2	0.638
FTC	2	1	control	2	16-Mar-10	Schedule (i)	50	30	-S9	25	402	505	16.1	0.796
FTC	2	1	control	2	16-Mar-10	Schedule (i)	75	30	-S9	25	569	508	22.8	1.120

***In Vitro* Sister Chromatid Exchange Assay of CHO cells with (+) and without (-) S9 Metabolic Activation**  
**(Observations per flask)**

Smoking Condition	Set Number	Run Number	Sample ID	Replicate Number	Assay Date	Treatment Schedule	TPM (µg/mL)	Treatment Time (h)	Metabolic Activation	Cell Counts (Flask 1)			SCE's per Cell/Chromosome	
										# of Cells	# of SCE	Number of chromosomes	SCE per Cell Flask 1	SCE per Chromosome Flask 1
FTC	3	1	control	2	23-Mar-10	Schedule (i)	0	30	-S9	25	174	519	6.96	0.335
FTC	3	1	control	2	23-Mar-10	Schedule (i)	10	30	-S9	25	205	503	8.20	0.408
FTC	3	1	control	2	23-Mar-10	Schedule (i)	25	30	-S9	25	260	520	10.40	0.500
FTC	3	1	control	2	23-Mar-10	Schedule (i)	37.5	30	-S9	25	318	520	12.7	0.612
FTC	3	1	control	2	23-Mar-10	Schedule (i)	50	30	-S9	25	405	519	16.2	0.780
FTC	3	1	control	2	23-Mar-10	Schedule (i)	75	30	-S9	25	554	518	22.2	1.069
FTC	2	1	control	3	25-Mar-10	Schedule (i)	0	30	-S9	25	167	524	6.68	0.319
FTC	2	1	control	3	25-Mar-10	Schedule (i)	10	30	-S9	25	213	523	8.52	0.407
FTC	2	1	control	3	25-Mar-10	Schedule (i)	25	30	-S9	25	269	522	10.76	0.515
FTC	2	1	control	3	25-Mar-10	Schedule (i)	37.5	30	-S9	25	322	524	12.9	0.615
FTC	2	1	control	3	25-Mar-10	Schedule (i)	50	30	-S9	25	402	525	16.1	0.766
FTC	2	1	control	3	25-Mar-10	Schedule (i)	75	30	-S9	25	551	524	22.0	1.052
FTC	3	1	control	3	30-Mar-10	Schedule (i)	0	30	-S9	25	156	509	6.24	0.306
FTC	3	1	control	3	30-Mar-10	Schedule (i)	10	30	-S9	25	208	514	8.32	0.405
FTC	3	1	control	3	30-Mar-10	Schedule (i)	25	30	-S9	25	264	518	10.56	0.510
FTC	3	1	control	3	30-Mar-10	Schedule (i)	37.5	30	-S9	25	311	516	12.4	0.603
FTC	3	1	control	3	30-Mar-10	Schedule (i)	50	30	-S9	25	395	511	15.8	0.773
FTC	3	1	control	3	30-Mar-10	Schedule (i)	75	30	-S9	25	554	516	22.2	1.074
FTC	1	1	control	1	09-Feb-10	Schedule (ii)	0	3	+S9	25	165	522	6.60	0.316
FTC	1	1	control	1	09-Feb-10	Schedule (ii)	100	3	+S9	25	199	524	7.96	0.380
FTC	1	1	control	1	09-Feb-10	Schedule (ii)	150	3	+S9	25	249	525	10.0	0.474
FTC	1	1	control	1	09-Feb-10	Schedule (ii)	200	3	+S9	25	301	524	12.0	0.574
FTC	1	1	control	1	09-Feb-10	Schedule (ii)	250	3	+S9	25	343	523	13.7	0.656
FTC	1	1	control	1	09-Feb-10	Schedule (ii)	275	3	+S9	25	397	526	15.9	0.755
FTC	1	1	control	1	09-Feb-10	Schedule (ii)	300	3	+S9	25	435	525	17.4	0.829
FTC	2	1	control	1	17-Feb-10	Schedule (ii)	0	3	+S9	25	182	512	7.28	0.355
FTC	2	1	control	1	17-Feb-10	Schedule (ii)	100	3	+S9	25	221	520	8.84	0.425
FTC	2	1	control	1	17-Feb-10	Schedule (ii)	150	3	+S9	25	235	519	9.4	0.453
FTC	2	1	control	1	17-Feb-10	Schedule (ii)	200	3	+S9	25	277	515	11.1	0.538
FTC	2	1	control	1	17-Feb-10	Schedule (ii)	250	3	+S9	25	338	509	13.5	0.664
FTC	2	1	control	1	17-Feb-10	Schedule (ii)	275	3	+S9	25	402	521	16.1	0.772
FTC	2	1	control	1	17-Feb-10	Schedule (ii)	300	3	+S9	25	476	515	19.0	0.924
FTC	3	1	control	1	25-Feb-10	Schedule (ii)	0	3	+S9	25	154	513	6.16	0.300
FTC	3	1	control	1	25-Feb-10	Schedule (ii)	100	3	+S9	25	202	517	8.08	0.391
FTC	3	1	control	1	25-Feb-10	Schedule (ii)	150	3	+S9	25	240	506	9.6	0.474
FTC	3	1	control	1	25-Feb-10	Schedule (ii)	200	3	+S9	25	289	510	11.6	0.567
FTC	3	1	control	1	25-Feb-10	Schedule (ii)	250	3	+S9	25	328	511	13.1	0.642
FTC	3	1	control	1	25-Feb-10	Schedule (ii)	275	3	+S9	25	385	516	15.4	0.746
FTC	3	1	control	1	25-Feb-10	Schedule (ii)	300	3	+S9	25	438	519	17.5	0.844

***In Vitro* Sister Chromatid Exchange Assay of CHO cells with (+) and without (-) S9 Metabolic Activation  
(Observations per flask)**

Smoking Condition	Set Number	Run Number	Sample ID	Replicate Number	Assay Date	Treatment Schedule	TPM (µg/mL)	Treatment Time (h)	Metabolic Activation	Cell Counts (Flask 1)			SCE's per Cell/Chromosome	
										# of Cells	# of SCE	Number of chromosomes	SCE per Cell	SCE per Chromosome
													Flask 1	Flask 1
FTC	1	1	control	2	04-Mar-10	Schedule (ii)	0	3	+S9	25	182	511	7.28	0.356
FTC	1	1	control	2	04-Mar-10	Schedule (ii)	100	3	+S9	25	211	516	8.44	0.409
FTC	1	1	control	2	04-Mar-10	Schedule (ii)	150	3	+S9	25	252	509	10.1	0.495
FTC	1	1	control	2	04-Mar-10	Schedule (ii)	200	3	+S9	25	293	521	11.7	0.562
FTC	1	1	control	2	04-Mar-10	Schedule (ii)	250	3	+S9	25	326	516	13.0	0.632
FTC	1	1	control	2	04-Mar-10	Schedule (ii)	275	3	+S9	25	405	511	16.2	0.793
FTC	1	1	control	2	04-Mar-10	Schedule (ii)	300	3	+S9	25	452	506	18.1	0.893
FTC	1	1	control	3	11-Mar-10	Schedule (ii)	0	3	+S9	25	165	524	6.60	0.315
FTC	1	1	control	3	11-Mar-10	Schedule (ii)	100	3	+S9	25	199	525	7.96	0.379
FTC	1	1	control	3	11-Mar-10	Schedule (ii)	150	3	+S9	25	238	526	9.5	0.452
FTC	1	1	control	3	11-Mar-10	Schedule (ii)	200	3	+S9	25	292	525	11.7	0.556
FTC	1	1	control	3	11-Mar-10	Schedule (ii)	250	3	+S9	25	337	524	13.5	0.643
FTC	1	1	control	3	11-Mar-10	Schedule (ii)	275	3	+S9	25	394	524	15.8	0.752
FTC	1	1	control	3	11-Mar-10	Schedule (ii)	300	3	+S9	25	450	524	18.0	0.859
FTC	2	1	control	2	18-Mar-10	Schedule (ii)	0	3	+S9	25	176	524	7.04	0.336
FTC	2	1	control	2	18-Mar-10	Schedule (ii)	100	3	+S9	25	204	523	8.16	0.390
FTC	2	1	control	2	18-Mar-10	Schedule (ii)	150	3	+S9	25	238	526	9.5	0.452
FTC	2	1	control	2	18-Mar-10	Schedule (ii)	200	3	+S9	25	281	525	11.2	0.535
FTC	2	1	control	2	18-Mar-10	Schedule (ii)	250	3	+S9	25	342	524	13.7	0.653
FTC	2	1	control	2	18-Mar-10	Schedule (ii)	275	3	+S9	25	398	523	15.9	0.761
FTC	2	1	control	2	18-Mar-10	Schedule (ii)	300	3	+S9	25	465	527	18.6	0.882
FTC	3	1	control	2	24-Mar-10	Schedule (ii)	0	3	+S9	25	166	509	6.64	0.326
FTC	3	1	control	2	24-Mar-10	Schedule (ii)	100	3	+S9	25	198	514	7.92	0.385
FTC	3	1	control	2	24-Mar-10	Schedule (ii)	150	3	+S9	25	245	529	9.8	0.463
FTC	3	1	control	2	24-Mar-10	Schedule (ii)	200	3	+S9	25	282	520	11.3	0.542
FTC	3	1	control	2	24-Mar-10	Schedule (ii)	250	3	+S9	25	339	525	13.6	0.646
FTC	3	1	control	2	24-Mar-10	Schedule (ii)	275	3	+S9	25	382	524	15.3	0.729
FTC	3	1	control	2	24-Mar-10	Schedule (ii)	300	3	+S9	25	443	515	17.7	0.860
FTC	2	1	control	3	25-Mar-10	Schedule (ii)	0	3	+S9	25	172	512	6.88	0.336
FTC	2	1	control	3	25-Mar-10	Schedule (ii)	100	3	+S9	25	205	521	8.20	0.393
FTC	2	1	control	3	25-Mar-10	Schedule (ii)	150	3	+S9	25	253	510	10.1	0.496
FTC	2	1	control	3	25-Mar-10	Schedule (ii)	200	3	+S9	25	302	509	12.1	0.593
FTC	2	1	control	3	25-Mar-10	Schedule (ii)	250	3	+S9	25	352	510	14.1	0.690
FTC	2	1	control	3	25-Mar-10	Schedule (ii)	275	3	+S9	25	395	518	15.8	0.763
FTC	2	1	control	3	25-Mar-10	Schedule (ii)	300	3	+S9	25	455	525	18.2	0.867

***In Vitro* Sister Chromatid Exchange Assay of CHO cells with (+) and without (-) S9 Metabolic Activation  
(Observations per flask)**

Smoking Condition	Set Number	Run Number	Sample ID	Replicate Number	Assay Date	Treatment Schedule	TPM (µg/mL)	Treatment Time (h)	Metabolic Activation	Cell Counts (Flask 1)			SCE's per Cell/Chromosome	
										# of Cells	# of SCE	Number of chromosomes	SCE per Cell	SCE per Chromosome
													Flask 1	Flask 1
FTC	2	1	control	4	30-Mar-10	Schedule (ii)	0	3	+S9	25	170	524	6.80	0.324
FTC	2	1	control	4	30-Mar-10	Schedule (ii)	100	3	+S9	25	200	524	8.00	0.382
FTC	2	1	control	4	30-Mar-10	Schedule (ii)	150	3	+S9	25	244	523	9.8	0.467
FTC	2	1	control	4	30-Mar-10	Schedule (ii)	200	3	+S9	25	288	523	11.5	0.551
FTC	2	1	control	4	30-Mar-10	Schedule (ii)	250	3	+S9	25	337	524	13.5	0.643
FTC	2	1	control	4	30-Mar-10	Schedule (ii)	275	3	+S9	25	391	523	15.6	0.748
FTC	2	1	control	4	30-Mar-10	Schedule (ii)	300	3	+S9	25	451	524	18.0	0.861

**FTC** - 35mL puff volume; 60 second interval; 2 second duration; 0% vent blocking

***In Vitro* Sister Chromatid Exchange Assay of CHO cells with (+) and without (-) S9 Metabolic Activation  
(Cell Scoring per flask)**

Smoking Condition	Set Number	Run Number	Sample ID	Replicate Number	Assay Date	Treatment Schedule	TPM (µg/mL)	Treatment Time (h)	Metabolic Activation	Flask 1					
										Metaphases Scored					AGT (hours)
										M1	M1+	M2	M2+	PRI	
FTC	1	1	control	1	04-Feb-10	Schedule (i)	0	30	-S9	2	3	81	14	2.12	14.15
FTC	1	1	control	1	04-Feb-10	Schedule (i)	10	30	-S9	6	5	77	12	2.06	14.56
FTC	1	1	control	1	04-Feb-10	Schedule (i)	25	30	-S9	10	7	72	11	2.01	14.93
FTC	1	1	control	1	04-Feb-10	Schedule (i)	37.5	30	-S9	10	8	77	5	1.95	15.38
FTC	1	1	control	1	04-Feb-10	Schedule (i)	50	30	-S9	14	10	73	3	1.89	15.87
FTC	1	1	control	1	04-Feb-10	Schedule (i)	75	30	-S9	22	13	62	3	1.81	16.57
FTC	2	1	control	1	11-Feb-10	Schedule (i)	0	30	-S9	1	0	86	13	2.12	14.15
FTC	2	1	control	1	11-Feb-10	Schedule (i)	10	30	-S9	4	2	84	10	2.06	14.56
FTC	2	1	control	1	11-Feb-10	Schedule (i)	25	30	-S9	7	4	81	8	2.01	14.93
FTC	2	1	control	1	11-Feb-10	Schedule (i)	37.5	30	-S9	10	4	79	7	1.97	15.23
FTC	2	1	control	1	11-Feb-10	Schedule (i)	50	30	-S9	16	4	75	5	1.89	15.87
FTC	2	1	control	1	11-Feb-10	Schedule (i)	75	30	-S9	26	6	66	2	1.76	17.05
FTC	3	1	control	1	23-Feb-10	Schedule (i)	0	30	-S9	2	2	82	14	2.12	14.15
FTC	3	1	control	1	23-Feb-10	Schedule (i)	10	30	-S9	6	1	81	12	2.06	14.56
FTC	3	1	control	1	23-Feb-10	Schedule (i)	25	30	-S9	10	2	79	9	1.99	15.08
FTC	3	1	control	1	23-Feb-10	Schedule (i)	37.5	30	-S9	13	6	76	5	1.92	15.63
FTC	3	1	control	1	23-Feb-10	Schedule (i)	50	30	-S9	19	5	71	5	1.86	16.13
FTC	3	1	control	1	23-Feb-10	Schedule (i)	75	30	-S9	27	1	70	2	1.75	17.14
FTC	1	1	control	2	02-Mar-10	Schedule (i)	0	30	-S9	1	1	85	13	2.12	14.15
FTC	1	1	control	2	02-Mar-10	Schedule (i)	10	30	-S9	5	2	83	10	2.05	14.63
FTC	1	1	control	2	02-Mar-10	Schedule (i)	25	30	-S9	6	5	84	5	1.99	15.08
FTC	1	1	control	2	02-Mar-10	Schedule (i)	37.5	30	-S9	9	2	85	4	1.95	15.38
FTC	1	1	control	2	02-Mar-10	Schedule (i)	50	30	-S9	12	5	81	2	1.90	15.79
FTC	1	1	control	2	02-Mar-10	Schedule (i)	75	30	-S9	23	10	65	2	1.79	16.76
FTC	1	1	control	3	09-Mar-10	Schedule (i)	0	30	-S9	1	5	82	12	2.11	14.22
FTC	1	1	control	3	09-Mar-10	Schedule (i)	10	30	-S9	5	2	83	10	2.05	14.63
FTC	1	1	control	3	09-Mar-10	Schedule (i)	25	30	-S9	6	5	84	5	1.99	15.08
FTC	1	1	control	3	09-Mar-10	Schedule (i)	37.5	30	-S9	10	1	85	4	1.94	15.46
FTC	1	1	control	3	09-Mar-10	Schedule (i)	50	30	-S9	12	6	81	1	1.89	15.87
FTC	1	1	control	3	09-Mar-10	Schedule (i)	75	30	-S9	23	11	65	1	1.78	16.85

***In Vitro* Sister Chromatid Exchange Assay of CHO cells with (+) and without (-) S9 Metabolic Activation  
(Cell Scoring per flask)**

Smoking Condition	Set Number	Run Number	Sample ID	Replicate Number	Assay Date	Treatment Schedule	TPM (µg/mL)	Treatment Time (h)	Metabolic Activation	Flask 1					
										Metaphases Scored					AGT (hours)
										M1	M1+	M2	M2+	PRI	
FTC	2	1	control	2	16-Mar-10	Schedule (i)	0	30	-S9	2	1	83	14	2.12	14.15
FTC	2	1	control	2	16-Mar-10	Schedule (i)	10	30	-S9	5	2	82	11	2.06	14.56
FTC	2	1	control	2	16-Mar-10	Schedule (i)	25	30	-S9	8	1	81	10	2.02	14.85
FTC	2	1	control	2	16-Mar-10	Schedule (i)	37.5	30	-S9	10	1	83	6	1.96	15.31
FTC	2	1	control	2	16-Mar-10	Schedule (i)	50	30	-S9	14	1	81	4	1.90	15.79
FTC	2	1	control	2	16-Mar-10	Schedule (i)	75	30	-S9	23	1	75	1	1.78	16.85
FTC	3	1	control	2	23-Mar-10	Schedule (i)	0	30	-S9	3	2	82	13	2.10	14.29
FTC	3	1	control	2	23-Mar-10	Schedule (i)	10	30	-S9	4	2	83	11	2.07	14.49
FTC	3	1	control	2	23-Mar-10	Schedule (i)	25	30	-S9	6	4	83	7	2.01	14.93
FTC	3	1	control	2	23-Mar-10	Schedule (i)	37.5	30	-S9	10	5	80	5	1.95	15.38
FTC	3	1	control	2	23-Mar-10	Schedule (i)	50	30	-S9	14	4	78	4	1.90	15.79
FTC	3	1	control	2	23-Mar-10	Schedule (i)	75	30	-S9	24	2	73	1	1.77	16.95
FTC	2	1	control	3	25-Mar-10	Schedule (i)	0	30	-S9	1	3	82	14	2.13	14.08
FTC	2	1	control	3	25-Mar-10	Schedule (i)	10	30	-S9	5	2	82	11	2.06	14.56
FTC	2	1	control	3	25-Mar-10	Schedule (i)	25	30	-S9	6	5	84	5	1.99	15.08
FTC	2	1	control	3	25-Mar-10	Schedule (i)	37.5	30	-S9	11	1	85	3	1.92	15.63
FTC	2	1	control	3	25-Mar-10	Schedule (i)	50	30	-S9	15	3	81	1	1.86	16.13
FTC	2	1	control	3	25-Mar-10	Schedule (i)	75	30	-S9	26	7	66	1	1.75	17.14
FTC	3	1	control	3	30-Mar-10	Schedule (i)	0	30	-S9	2	1	86	11	2.09	14.35
FTC	3	1	control	3	30-Mar-10	Schedule (i)	10	30	-S9	5	3	84	8	2.03	14.78
FTC	3	1	control	3	30-Mar-10	Schedule (i)	25	30	-S9	7	4	82	7	2.00	15.00
FTC	3	1	control	3	30-Mar-10	Schedule (i)	37.5	30	-S9	11	3	81	5	1.94	15.46
FTC	3	1	control	3	30-Mar-10	Schedule (i)	50	30	-S9	15	6	77	2	1.87	16.04
FTC	3	1	control	3	30-Mar-10	Schedule (i)	75	30	-S9	23	8	69	0	1.77	16.95
FTC	1	1	control	1	09-Feb-10	Schedule (ii)	0	3	+S9	2	0	86	12	2.10	14.29
FTC	1	1	control	1	09-Feb-10	Schedule (ii)	100	3	+S9	3	3	85	9	2.06	14.56
FTC	1	1	control	1	09-Feb-10	Schedule (ii)	150	3	+S9	5	4	85	6	2.01	14.93
FTC	1	1	control	1	09-Feb-10	Schedule (ii)	200	3	+S9	8	4	84	4	1.96	15.31
FTC	1	1	control	1	09-Feb-10	Schedule (ii)	250	3	+S9	10	4	83	3	1.93	15.54
FTC	1	1	control	1	09-Feb-10	Schedule (ii)	275	3	+S9	12	6	82	0	1.88	15.96
FTC	1	1	control	1	09-Feb-10	Schedule (ii)	300	3	+S9	17	8	75	0	1.83	16.39

***In Vitro* Sister Chromatid Exchange Assay of CHO cells with (+) and without (-) S9 Metabolic Activation  
(Cell Scoring per flask)**

Smoking Condition	Set Number	Run Number	Sample ID	Replicate Number	Assay Date	Treatment Schedule	TPM (µg/mL)	Treatment Time (h)	Metabolic Activation	Flask 1						AGT (hours)
										Metaphases Scored						
										M1	M1+	M2	M2+	PRI		
FTC	2	1	control	1	17-Feb-10	Schedule (ii)	0	3	+S9	2	1	88	9	2.07	14.49	
FTC	2	1	control	1	17-Feb-10	Schedule (ii)	100	3	+S9	3	4	85	8	2.05	14.63	
FTC	2	1	control	1	17-Feb-10	Schedule (ii)	150	3	+S9	5	7	80	8	2.03	14.78	
FTC	2	1	control	1	17-Feb-10	Schedule (ii)	200	3	+S9	8	6	81	5	1.97	15.23	
FTC	2	1	control	1	17-Feb-10	Schedule (ii)	250	3	+S9	13	5	79	3	1.90	15.79	
FTC	2	1	control	1	17-Feb-10	Schedule (ii)	275	3	+S9	13	7	79	1	1.88	15.96	
FTC	2	1	control	1	17-Feb-10	Schedule (ii)	300	3	+S9	24	5	69	2	1.78	16.85	
FTC	3	1	control	1	25-Feb-10	Schedule (ii)	0	3	+S9	3	1	84	12	2.09	14.35	
FTC	3	1	control	1	25-Feb-10	Schedule (ii)	100	3	+S9	5	2	83	10	2.05	14.63	
FTC	3	1	control	1	25-Feb-10	Schedule (ii)	150	3	+S9	8	3	80	9	2.01	14.93	
FTC	3	1	control	1	25-Feb-10	Schedule (ii)	200	3	+S9	10	4	82	4	1.94	15.46	
FTC	3	1	control	1	25-Feb-10	Schedule (ii)	250	3	+S9	12	6	79	3	1.91	15.71	
FTC	3	1	control	1	25-Feb-10	Schedule (ii)	275	3	+S9	15	7	76	2	1.87	16.04	
FTC	3	1	control	1	25-Feb-10	Schedule (ii)	300	3	+S9	21	8	70	1	1.80	16.67	
FTC	1	1	control	2	04-Mar-10	Schedule (ii)	0	3	+S9	2	0	82	16	2.14	14.02	
FTC	1	1	control	2	04-Mar-10	Schedule (ii)	100	3	+S9	3	1	84	12	2.09	14.35	
FTC	1	1	control	2	04-Mar-10	Schedule (ii)	150	3	+S9	5	6	81	8	2.03	14.78	
FTC	1	1	control	2	04-Mar-10	Schedule (ii)	200	3	+S9	9	6	78	7	1.98	15.15	
FTC	1	1	control	2	04-Mar-10	Schedule (ii)	250	3	+S9	14	3	77	6	1.92	15.63	
FTC	1	1	control	2	04-Mar-10	Schedule (ii)	275	3	+S9	15	6	75	4	1.89	15.87	
FTC	1	1	control	2	04-Mar-10	Schedule (ii)	300	3	+S9	22	5	71	2	1.80	16.67	
FTC	1	1	control	3	11-Mar-10	Schedule (ii)	0	3	+S9	2	0	85	13	2.11	14.22	
FTC	1	1	control	3	11-Mar-10	Schedule (ii)	100	3	+S9	3	3	84	10	2.07	14.49	
FTC	1	1	control	3	11-Mar-10	Schedule (ii)	150	3	+S9	5	4	84	7	2.02	14.85	
FTC	1	1	control	3	11-Mar-10	Schedule (ii)	200	3	+S9	9	4	82	5	1.96	15.31	
FTC	1	1	control	3	11-Mar-10	Schedule (ii)	250	3	+S9	12	0	83	5	1.93	15.54	
FTC	1	1	control	3	11-Mar-10	Schedule (ii)	275	3	+S9	12	5	82	1	1.89	15.87	
FTC	1	1	control	3	11-Mar-10	Schedule (ii)	300	3	+S9	17	4	79	0	1.83	16.39	

***In Vitro* Sister Chromatid Exchange Assay of CHO cells with (+) and without (-) S9 Metabolic Activation  
(Cell Scoring per flask)**

Smoking Condition	Set Number	Run Number	Sample ID	Replicate Number	Assay Date	Treatment Schedule	TPM (µg/mL)	Treatment Time (h)	Metabolic Activation	Flask 1						AGT (hours)
										Metaphases Scored						
										M1	M1+	M2	M2+	PRI		
FTC	2	1	control	2	18-Mar-10	Schedule (ii)	0	3	+S9	1	0	87	12	2.11	14.22	
FTC	2	1	control	2	18-Mar-10	Schedule (ii)	100	3	+S9	2	4	86	8	2.06	14.56	
FTC	2	1	control	2	18-Mar-10	Schedule (ii)	150	3	+S9	6	3	84	7	2.01	14.93	
FTC	2	1	control	2	18-Mar-10	Schedule (ii)	200	3	+S9	10	1	82	7	1.97	15.23	
FTC	2	1	control	2	18-Mar-10	Schedule (ii)	250	3	+S9	12	3	81	4	1.92	15.63	
FTC	2	1	control	2	18-Mar-10	Schedule (ii)	275	3	+S9	14	6	78	2	1.88	15.96	
FTC	2	1	control	2	18-Mar-10	Schedule (ii)	300	3	+S9	21	3	74	2	1.81	16.57	
FTC	3	1	control	2	24-Mar-10	Schedule (ii)	0	3	+S9	4	0	81	15	2.11	14.22	
FTC	3	1	control	2	24-Mar-10	Schedule (ii)	100	3	+S9	5	2	83	10	2.05	14.63	
FTC	3	1	control	2	24-Mar-10	Schedule (ii)	150	3	+S9	9	1	79	11	2.02	14.85	
FTC	3	1	control	2	24-Mar-10	Schedule (ii)	200	3	+S9	12	0	80	8	1.96	15.31	
FTC	3	1	control	2	24-Mar-10	Schedule (ii)	250	3	+S9	15	1	77	7	1.92	15.63	
FTC	3	1	control	2	24-Mar-10	Schedule (ii)	275	3	+S9	18	2	75	5	1.87	16.04	
FTC	3	1	control	2	24-Mar-10	Schedule (ii)	300	3	+S9	22	1	74	3	1.81	16.57	
FTC	2	1	control	3	25-Mar-10	Schedule (ii)	0	3	+S9	1	0	83	16	2.15	13.95	
FTC	2	1	control	3	25-Mar-10	Schedule (ii)	100	3	+S9	4	0	81	15	2.11	14.22	
FTC	2	1	control	3	25-Mar-10	Schedule (ii)	150	3	+S9	6	1	83	10	2.04	14.71	
FTC	2	1	control	3	25-Mar-10	Schedule (ii)	200	3	+S9	12	0	77	11	1.99	15.08	
FTC	2	1	control	3	25-Mar-10	Schedule (ii)	250	3	+S9	14	3	77	6	1.92	15.63	
FTC	2	1	control	3	25-Mar-10	Schedule (ii)	275	3	+S9	18	2	75	5	1.87	16.04	
FTC	2	1	control	3	25-Mar-10	Schedule (ii)	300	3	+S9	23	1	73	3	1.80	16.67	
FTC	2	1	control	4	30-Mar-10	Schedule (ii)	0	3	+S9	2	1	83	14	2.12	14.15	
FTC	2	1	control	4	30-Mar-10	Schedule (ii)	100	3	+S9	4	2	83	11	2.07	14.49	
FTC	2	1	control	4	30-Mar-10	Schedule (ii)	150	3	+S9	5	3	84	8	2.03	14.78	
FTC	2	1	control	4	30-Mar-10	Schedule (ii)	200	3	+S9	8	2	84	6	1.98	15.15	
FTC	2	1	control	4	30-Mar-10	Schedule (ii)	250	3	+S9	15	2	75	8	1.93	15.54	
FTC	2	1	control	4	30-Mar-10	Schedule (ii)	275	3	+S9	20	6	67	7	1.87	16.04	
FTC	2	1	control	4	30-Mar-10	Schedule (ii)	300	3	+S9	23	7	67	3	1.80	16.67	

FTC - 35mL puff volume; 60 second interval; 2 second duration; 0% vent blocking

**LABSTAT INTERNATIONAL ULC**

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Project: M125

Period: February 4 - March 30, 2010

**Positive and Negative Controls for *In Vitro* Sister Chromatid Exchange Assay with (+) and without (-) S9 Metabolic Activation  
(Observations per flask)**

Assay Date	+ Control Substance Dose (µg/mL)		Treatment Schedule	Treatment Time (h)	Metabolic Activation	Metaphase Number	Flask Number 1				Flask Number 2			
							- Control		+ Control		- Control		+ Control	
							# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	1	6	21	23	22	6	22	26	23
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	2	4	21	25	19	6	21	24	20
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	3	7	20	27	19	8	19	23	19
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	4	5	20	26	20	5	20	25	23
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	5	5	21	21	20	5	21	22	21
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	6	8	21	24	20	7	23	27	20
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	7	8	23	27	19	6	20	21	21
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	8	7	20	22	21	4	19	22	19
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	9	9	21	28	22	5	21	20	21
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	10	6	20	20	20	8	20	21	20
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	11	6	21	29	22	9	22	19	19
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	12	8	22	23	21	8	23	23	19
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	13	7	21	27	21	4	20	26	23
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	14	7	20	21	19	5	23	22	19
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	15	6	20	25	22	7	20	29	23
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	16	8	22	25	20	6	19	28	21
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	17	5	19	28	20	7	22	24	20
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	18	7	21	22	19	6	21	25	21
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	19	6	21	25	21	8	23	27	22
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	20	6	20	26	21	4	21	18	21
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	21	8	22	23	22	6	19	20	21
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	22	5	20	22	19	4	22	26	23
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	23	7	22	22	20	6	21	19	21
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	24	5	21	26	20	9	23	22	21
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	25	6	19	21	20	4	20	27	22

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Project: M125

Period: February 4 - March 30, 2010

**Positive and Negative Controls for *In Vitro* Sister Chromatid Exchange Assay with (+) and without (-) S9 Metabolic Activation  
(Observations per flask)**

Assay Date	+ Control Substance Dose (µg/mL)		Treatment Schedule	Treatment Time (h)	Metabolic Activation	Metaphase Number	Flask Number 1				Flask Number 2			
							- Control		+ Control		- Control		+ Control	
							# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	1	7	23	25	20	4	20	23	19
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	2	6	20	26	23	4	19	26	23
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	3	5	21	23	20	5	21	25	19
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	4	6	19	25	21	7	20	22	23
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	5	8	20	24	22	4	19	21	20
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	6	10	22	22	22	4	20	20	19
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	7	9	21	29	20	6	21	19	19
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	8	7	23	28	19	7	19	25	19
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	9	10	19	23	20	5	20	20	23
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	10	6	20	19	19	7	19	28	20
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	11	5	21	30	19	6	19	23	19
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	12	5	23	24	19	6	22	20	21
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	13	4	20	27	22	7	20	27	20
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	14	4	19	23	20	6	19	19	22
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	15	3	19	22	19	5	23	22	23
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	16	7	20	20	20	7	21	20	19
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	17	5	21	21	19	4	20	25	22
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	18	4	22	18	19	4	20	20	20
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	19	5	19	23	23	4	22	19	19
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	20	7	19	20	20	7	20	26	21
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	21	6	20	22	21	6	19	28	21
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	22	8	21	21	21	8	21	25	19
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	23	10	19	31	22	4	23	27	23
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	24	5	20	29	22	5	20	29	22
04-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	25	3	23	17	20	5	19	20	20

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Project: M125

Period: February 4 - March 30, 2010

**Positive and Negative Controls for *In Vitro* Sister Chromatid Exchange Assay with (+) and without (-) S9 Metabolic Activation  
(Observations per flask)**

Assay Date	+ Control Substance Dose (µg/mL)		Treatment Schedule	Treatment Time (h)	Metabolic Activation	Metaphase Number	Flask Number 1				Flask Number 2			
							- Control		+ Control		- Control		+ Control	
							# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	1	4	19	24	19	9	19	27	19
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	2	6	19	26	22	5	20	30	19
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	3	5	21	19	20	6	21	22	20
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	4	7	19	23	20	5	20	23	22
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	5	6	20	29	23	4	20	25	21
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	6	6	19	27	19	3	19	29	21
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	7	8	23	23	19	6	22	26	22
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	8	7	19	31	21	4	21	27	23
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	9	4	22	24	19	7	20	25	20
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	10	6	20	20	22	8	19	22	21
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	11	5	22	25	19	5	22	28	21
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	12	4	19	22	19	7	20	25	20
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	13	5	20	21	19	7	19	31	20
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	14	5	23	29	22	5	21	29	20
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	15	6	20	27	21	6	23	27	19
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	16	5	19	26	20	6	22	28	20
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	17	4	21	20	23	5	20	25	20
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	18	7	21	29	20	7	21	21	19
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	19	6	19	28	22	6	20	20	19
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	20	6	19	27	20	4	22	25	23
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	21	8	22	24	19	6	21	20	21
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	22	5	20	27	19	5	19	25	21
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	23	6	19	26	23	4	19	23	23
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	24	7	23	21	23	8	23	19	23
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	25	4	21	29	23	9	21	28	22

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Project: M125

Period: February 4 - March 30, 2010

**Positive and Negative Controls for *In Vitro* Sister Chromatid Exchange Assay with (+) and without (-) S9 Metabolic Activation  
(Observations per flask)**

Assay Date	+ Control Substance Dose (µg/mL)		Treatment Schedule	Treatment Time (h)	Metabolic Activation	Metaphase Number	Flask Number 1				Flask Number 2			
							- Control		+ Control		- Control		+ Control	
							# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	1	7	23	30	20	4	19	27	20
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	2	7	19	25	20	5	20	24	19
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	3	4	19	29	21	5	23	28	23
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	4	5	21	31	20	6	20	25	19
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	5	4	20	24	22	3	20	30	20
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	6	5	19	28	23	5	20	27	20
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	7	7	20	29	19	6	19	29	21
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	8	7	22	25	22	7	21	28	20
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	9	7	20	24	20	7	20	21	20
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	10	4	19	28	21	4	19	22	20
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	11	4	23	22	19	6	19	28	19
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	12	5	19	26	22	5	21	21	19
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	13	7	19	29	23	5	22	29	21
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	14	8	22	25	20	8	20	23	23
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	15	8	23	23	21	10	21	28	22
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	16	6	20	28	23	5	20	29	23
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	17	5	19	22	19	9	20	28	20
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	18	4	21	25	19	8	23	29	19
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	19	7	20	27	21	5	19	26	21
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	20	7	20	21	21	2	21	25	20
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	21	8	19	26	19	10	19	28	19
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	22	6	22	25	22	9	20	29	19
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	23	7	23	28	19	10	19	29	19
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	24	7	20	22	22	10	22	20	23
11-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	25	7	20	26	22	9	20	25	22

**LABSTAT INTERNATIONAL ULC**

262 Manitou Drive, Kitchener, Ontario, Canada N2C 1L3

Phone (519) 748-5409 FAX (519) 748-1654

Project: M125

Period: February 4 - March 30, 2010

**Positive and Negative Controls for *In Vitro* Sister Chromatid Exchange Assay with (+) and without (-) S9 Metabolic Activation  
(Observations per flask)**

Assay Date	+ Control Substance Dose (µg/mL)		Treatment Schedule	Treatment Time (h)	Metabolic Activation	Metaphase Number	Flask Number 1				Flask Number 2			
							- Control		+ Control		- Control		+ Control	
							# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	1	5	20	23	19	8	19	23	23
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	2	6	20	31	19	7	23	25	20
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	3	5	20	24	21	5	20	24	22
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	4	7	22	26	20	6	19	29	21
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	5	8	19	29	22	7	20	30	20
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	6	5	21	28	20	7	22	31	19
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	7	7	20	22	21	6	21	22	19
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	8	6	22	30	20	8	20	25	19
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	9	6	20	24	22	5	19	28	21
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	10	9	21	26	21	10	19	27	19
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	11	5	19	24	20	8	20	19	19
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	12	5	21	29	19	6	19	20	22
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	13	9	19	25	19	7	19	26	19
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	14	5	19	30	22	7	20	28	23
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	15	7	22	22	19	8	21	24	22
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	16	8	20	24	21	9	19	25	22
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	17	8	21	26	19	6	19	29	21
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	18	5	23	29	19	5	20	25	20
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	19	4	23	23	22	7	19	22	19
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	20	7	22	22	20	6	19	24	19
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	21	8	20	27	21	6	21	21	21
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	22	6	20	26	21	6	22	26	20
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	23	8	19	29	20	8	20	27	22
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	24	6	19	22	19	7	19	29	21
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	25	8	20	21	23	5	19	27	21

**LABSTAT INTERNATIONAL ULC**

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Phone (519) 748-5409 FAX (519) 748-1654

Project: M125

Period: February 4 - March 30, 2010

**Positive and Negative Controls for *In Vitro* Sister Chromatid Exchange Assay with (+) and without (-) S9 Metabolic Activation  
(Observations per flask)**

Assay Date	+ Control Substance Dose (µg/mL)		Treatment Schedule	Treatment Time (h)	Metabolic Activation	Metaphase Number	Flask Number 1				Flask Number 2			
							- Control		+ Control		- Control		+ Control	
							# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	1	8	21	28	21	9	21	26	19
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	2	6	19	27	22	4	19	23	21
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	3	5	20	29	19	6	22	22	21
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	4	8	19	24	21	5	20	27	22
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	5	7	51	22	23	8	21	29	22
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	6	5	20	30	19	7	20	28	20
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	7	7	19	25	21	9	22	25	21
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	8	7	22	27	19	6	20	27	23
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	9	5	20	26	22	6	21	24	20
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	10	6	19	25	19	6	21	29	22
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	11	8	20	28	22	5	21	30	19
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	12	6	21	26	21	8	19	28	22
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	13	7	19	21	20	7	19	22	19
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	14	5	20	23	19	9	22	26	21
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	15	8	19	20	23	7	21	28	20
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	16	6	22	25	21	5	23	23	22
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	17	6	20	20	20	7	23	28	20
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	18	7	19	23	19	5	20	26	20
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	19	8	19	26	19	5	20	24	21
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	20	8	21	28	21	5	23	27	21
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	21	8	23	21	20	8	20	28	22
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	22	6	20	29	19	6	21	23	21
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	23	8	22	22	23	4	20	30	19
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	24	8	20	29	20	7	19	24	19
23-Feb-10	Mitomycin C	0.005	Schedule (i)	30	-S9	25	6	19	26	19	7	19	25	19

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Project: M125

Period: February 4 - March 30, 2010

**Positive and Negative Controls for *In Vitro* Sister Chromatid Exchange Assay with (+) and without (-) S9 Metabolic Activation  
(Observations per flask)**

Assay Date	+ Control Substance Dose (µg/mL)		Treatment Schedule	Treatment Time (h)	Metabolic Activation	Metaphase Number	Flask Number 1				Flask Number 2			
							- Control		+ Control		- Control		+ Control	
							# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	1	5	19	22	22	9	19	31	20
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	2	4	20	25	23	5	20	26	19
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	3	6	21	19	21	5	22	24	19
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	4	7	20	21	20	8	21	29	22
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	5	8	19	18	20	6	19	20	20
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	6	5	19	29	20	7	19	23	21
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	7	6	22	27	19	4	22	25	23
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	8	7	19	25	21	4	20	24	21
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	9	7	19	28	20	9	21	29	21
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	10	5	21	26	20	6	20	27	20
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	11	3	20	24	19	5	21	25	20
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	12	6	19	27	19	5	22	21	20
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	13	8	19	19	23	8	20	26	20
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	14	7	23	21	22	9	21	23	22
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	15	7	20	18	22	4	20	29	20
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	16	6	19	22	23	4	22	25	21
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	17	9	21	24	21	6	21	24	22
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	18	6	22	30	23	7	20	26	20
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	19	7	23	28	23	7	21	24	19
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	20	8	20	27	20	8	20	23	19
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	21	6	21	23	23	6	22	25	21
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	22	7	19	29	20	5	23	22	23
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	23	5	19	30	20	5	23	31	20
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	24	8	21	35	19	5	19	30	19
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	25	9	22	28	19	9	19	24	22

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262 Manitou Drive, Kitchener, Ontario, Canada N2C 1L3

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Project: M125

Period: February 4 - March 30, 2010

**Positive and Negative Controls for *In Vitro* Sister Chromatid Exchange Assay with (+) and without (-) S9 Metabolic Activation  
(Observations per flask)**

Assay Date	+ Control Substance Dose (µg/mL)		Treatment Schedule	Treatment Time (h)	Metabolic Activation	Metaphase Number	Flask Number 1				Flask Number 2			
							- Control		+ Control		- Control		+ Control	
							# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	1	6	19	24	19	8	19	21	22
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	2	4	21	21	21	10	19	24	20
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	3	7	19	28	21	7	20	20	21
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	4	5	20	26	20	8	21	19	23
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	5	8	19	24	23	6	19	18	20
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	6	4	22	27	20	7	22	15	19
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	7	5	21	21	21	6	20	20	19
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	8	8	20	24	20	6	20	19	19
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	9	8	21	21	19	7	19	23	20
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	10	5	20	27	19	5	20	27	21
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	11	5	20	25	22	6	20	30	19
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	12	6	21	22	19	5	21	29	19
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	13	6	20	27	20	5	20	27	22
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	14	5	21	24	21	3	19	28	22
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	15	7	21	19	22	12	19	25	21
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	16	4	21	23	19	7	19	24	20
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	17	6	21	24	19	6	21	19	19
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	18	4	19	26	23	5	19	27	20
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	19	8	20	21	21	6	20	19	20
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	20	6	20	28	22	4	19	25	20
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	21	8	21	22	19	5	19	26	19
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	22	7	20	26	20	4	20	31	19
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	23	7	19	26	20	4	21	32	23
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	24	6	20	24	19	7	20	22	21
02-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	25	7	20	22	19	5	20	29	20

**LABSTAT INTERNATIONAL ULC**

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**Positive and Negative Controls for *In Vitro* Sister Chromatid Exchange Assay with (+) and without (-) S9 Metabolic Activation  
(Observations per flask)**

Assay Date	+ Control Substance Dose (µg/mL)		Treatment Schedule	Treatment Time (h)	Metabolic Activation	Metaphase Number	Flask Number 1				Flask Number 2			
							- Control		+ Control		- Control		+ Control	
							# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	1	2	19	24	19	6	19	26	21
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	2	5	20	20	20	7	22	27	23
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	3	8	20	25	23	5	19	25	19
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	4	5	21	24	21	8	23	26	20
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	5	8	19	28	22	9	20	19	22
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	6	4	19	27	20	7	23	22	23
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	7	5	19	30	19	8	21	24	20
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	8	8	19	28	21	5	20	26	22
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	9	7	23	21	20	4	19	25	19
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	10	5	20	28	19	7	23	27	23
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	11	7	21	22	19	5	20	22	21
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	12	6	22	24	21	8	21	23	23
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	13	5	19	21	20	4	23	29	21
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	14	6	20	20	19	7	20	27	19
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	15	8	19	29	21	5	22	21	20
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	16	5	19	27	19	8	19	27	23
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	17	6	20	25	20	7	21	29	22
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	18	7	20	21	20	8	22	22	19
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	19	6	19	20	21	6	23	28	21
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	20	8	19	24	19	8	20	29	19
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	21	8	19	23	19	7	19	25	20
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	22	5	19	27	21	5	20	29	19
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	23	6	21	28	21	7	23	23	21
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	24	9	20	29	22	7	19	25	23
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	25	8	20	27	20	5	23	19	21

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**Positive and Negative Controls for *In Vitro* Sister Chromatid Exchange Assay with (+) and without (-) S9 Metabolic Activation  
(Observations per flask)**

Assay Date	+ Control Substance Dose (µg/mL)		Treatment Schedule	Treatment Time (h)	Metabolic Activation	Metaphase Number	Flask Number 1				Flask Number 2			
							- Control		+ Control		- Control		+ Control	
							# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	1	4	19	21	23	4	21	24	20
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	2	6	23	29	21	6	20	22	21
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	3	7	19	20	19	7	20	22	20
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	4	5	19	26	22	7	20	21	19
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	5	5	22	26	21	9	19	23	20
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	6	5	20	29	20	8	21	22	22
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	7	8	19	28	20	5	19	23	21
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	8	6	23	26	20	8	22	24	19
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	9	5	20	25	21	9	19	23	20
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	10	7	19	20	19	7	20	29	21
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	11	4	22	25	23	5	22	26	22
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	12	5	20	24	20	8	21	28	22
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	13	7	21	28	23	4	22	29	21
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	14	8	21	20	20	6	19	27	20
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	15	6	21	20	22	7	20	24	20
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	16	6	20	29	20	7	20	25	22
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	17	6	23	26	19	6	19	21	21
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	18	5	20	23	19	8	19	26	19
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	19	7	19	21	19	5	20	23	19
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	20	6	22	24	23	5	20	25	22
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	21	5	20	25	20	4	21	27	20
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	22	5	19	27	21	9	20	22	23
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	23	5	21	25	20	6	21	25	19
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	24	6	23	28	22	6	19	23	21
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	25	6	23	21	23	7	20	26	20

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262 Manitou Drive, Kitchener, Ontario, Canada N2C 1L3

Phone (519) 748-5409 FAX (519) 748-1654

Project: M125

Period: February 4 - March 30, 2010

**Positive and Negative Controls for *In Vitro* Sister Chromatid Exchange Assay with (+) and without (-) S9 Metabolic Activation  
(Observations per flask)**

Assay Date	+ Control Substance Dose (µg/mL)		Treatment Schedule	Treatment Time (h)	Metabolic Activation	Metaphase Number	Flask Number 1				Flask Number 2			
							- Control		+ Control		- Control		+ Control	
							# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	1	5	20	22	20	5	19	22	22
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	2	8	20	28	19	8	19	29	21
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	3	7	22	25	19	4	19	30	22
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	4	9	19	23	20	9	22	25	20
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	5	5	23	26	22	6	23	26	23
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	6	6	19	28	21	8	20	24	21
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	7	6	20	29	23	5	20	28	22
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	8	6	23	26	19	5	21	28	19
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	9	6	21	23	19	7	21	23	20
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	10	8	20	22	22	6	21	20	19
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	11	5	19	29	20	7	21	26	21
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	12	7	22	25	19	4	22	24	19
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	13	7	19	29	22	4	22	26	19
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	14	6	20	22	21	8	20	26	19
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	15	8	23	27	20	6	21	28	20
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	16	5	19	29	23	9	19	25	21
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	17	7	22	28	22	6	19	31	21
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	18	7	20	28	20	9	19	24	22
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	19	5	19	29	19	5	22	27	20
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	20	8	21	27	19	5	20	23	20
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	21	8	21	29	21	4	22	23	20
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	22	6	21	22	23	7	21	25	19
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	23	7	19	20	20	7	22	24	19
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	24	6	19	24	19	8	20	26	19
09-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	25	6	20	27	21	6	21	22	19

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Project: M125

Period: February 4 - March 30, 2010

**Positive and Negative Controls for *In Vitro* Sister Chromatid Exchange Assay with (+) and without (-) S9 Metabolic Activation  
(Observations per flask)**

Assay Date	+ Control Substance Dose (µg/mL)		Treatment Schedule	Treatment Time (h)	Metabolic Activation	Metaphase Number	Flask Number 1				Flask Number 2			
							- Control		+ Control		- Control		+ Control	
							# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	1	7	19	23	23	5	20	25	20
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	2	7	23	22	20	4	21	23	19
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	3	6	19	19	19	6	20	24	19
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	4	8	21	22	20	5	19	21	23
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	5	6	22	21	21	4	19	20	22
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	6	6	23	24	20	6	19	27	20
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	7	5	20	28	23	7	20	28	21
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	8	9	21	26	20	5	20	26	21
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	9	8	22	23	20	4	19	25	20
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	10	4	22	25	22	5	19	28	21
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	11	6	19	21	23	4	19	23	21
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	12	9	23	28	21	6	21	20	19
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	13	5	21	26	19	11	20	22	19
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	14	7	21	25	22	13	20	24	19
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	15	6	19	22	21	7	20	29	19
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	16	6	20	29	23	8	19	27	23
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	17	5	23	26	22	5	19	31	20
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	18	8	23	23	19	6	19	24	23
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	19	6	19	26	20	5	20	23	23
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	20	8	22	23	21	7	20	28	21
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	21	6	19	27	22	5	19	25	19
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	22	7	20	29	19	6	20	22	19
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	23	5	19	21	22	14	19	21	20
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	24	4	20	24	19	5	20	20	20
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	25	6	23	26	23	13	19	28	19

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Project: M125

Period: February 4 - March 30, 2010

**Positive and Negative Controls for *In Vitro* Sister Chromatid Exchange Assay with (+) and without (-) S9 Metabolic Activation  
(Observations per flask)**

Assay Date	+ Control Substance Dose (µg/mL)		Treatment Schedule	Treatment Time (h)	Metabolic Activation	Metaphase Number	Flask Number 1				Flask Number 2			
							- Control		+ Control		- Control		+ Control	
							# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	1	5	19	20	22	7	22	19	23
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	2	7	20	25	20	8	20	24	19
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	3	7	22	24	19	5	19	30	23
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	4	11	21	23	20	6	21	23	21
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	5	8	19	22	21	7	20	27	20
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	6	4	19	25	20	6	19	25	21
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	7	10	21	22	20	7	23	29	19
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	8	10	23	21	19	5	20	22	21
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	9	3	19	20	19	8	21	27	23
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	10	4	20	28	19	8	23	28	19
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	11	2	20	23	19	9	20	28	22
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	12	3	21	21	23	6	22	22	21
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	13	4	20	20	19	5	19	25	19
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	14	5	20	23	21	7	21	27	21
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	15	6	19	29	20	6	22	25	21
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	16	5	19	25	21	7	23	19	23
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	17	7	20	30	21	6	19	20	19
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	18	7	19	28	19	6	20	25	23
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	19	8	19	29	19	5	23	26	22
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	20	7	19	31	19	6	21	24	19
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	21	9	20	25	20	8	21	25	21
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	22	5	19	24	20	6	19	27	23
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	23	8	19	26	19	9	20	28	19
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	24	4	19	22	20	6	23	29	21
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	25	7	21	29	22	9	22	22	22

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Project: M125

Period: February 4 - March 30, 2010

**Positive and Negative Controls for *In Vitro* Sister Chromatid Exchange Assay with (+) and without (-) S9 Metabolic Activation  
(Observations per flask)**

Assay Date	+ Control Substance Dose (µg/mL)		Treatment Schedule	Treatment Time (h)	Metabolic Activation	Metaphase Number	Flask Number 1				Flask Number 2			
							- Control		+ Control		- Control		+ Control	
							# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	1	7	19	24	20	7	23	20	20
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	2	6	19	26	19	8	19	24	19
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	3	9	20	30	19	7	21	24	20
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	4	8	19	27	20	5	21	28	21
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	5	8	23	29	19	6	21	29	20
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	6	5	20	30	23	6	21	25	19
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	7	5	22	23	19	8	22	24	19
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	8	7	20	25	19	8	21	22	22
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	9	6	19	21	22	7	20	28	20
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	10	5	23	26	20	5	21	23	20
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	11	8	21	29	22	7	22	21	19
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	12	4	20	20	20	6	20	26	23
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	13	5	19	22	19	4	21	26	22
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	14	7	22	21	19	6	20	22	21
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	15	9	20	21	23	5	21	26	22
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	16	9	20	24	23	5	20	27	19
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	17	7	19	26	21	6	20	24	20
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	18	6	21	27	20	6	19	25	19
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	19	7	20	29	19	7	20	26	21
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	20	9	20	24	21	4	21	24	21
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	21	5	22	20	22	6	22	27	20
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	22	5	20	21	20	7	21	23	19
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	23	8	23	22	19	9	20	22	19
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	24	9	19	20	19	9	20	21	21
16-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	25	9	19	27	22	5	21	24	21

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**Positive and Negative Controls for *In Vitro* Sister Chromatid Exchange Assay with (+) and without (-) S9 Metabolic Activation  
(Observations per flask)**

Assay Date	+ Control Substance Dose (µg/mL)		Treatment Schedule	Treatment Time (h)	Metabolic Activation	Metaphase Number	Flask Number 1				Flask Number 2			
							- Control		+ Control		- Control		+ Control	
							# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	1	8	20	25	20	5	19	27	20
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	2	4	21	21	20	8	19	29	21
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	3	5	22	29	23	8	20	25	23
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	4	4	23	26	19	4	20	19	20
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	5	8	21	20	23	4	19	23	21
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	6	7	21	21	22	5	20	29	20
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	7	5	22	25	23	6	20	30	19
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	8	4	20	29	19	4	19	26	19
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	9	7	21	27	21	6	19	22	21
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	10	7	19	25	20	5	20	21	19
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	11	4	22	26	22	8	20	28	21
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	12	8	21	29	23	6	21	22	20
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	13	5	23	25	19	7	20	20	19
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	14	7	19	28	23	4	19	21	20
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	15	6	21	24	21	8	20	27	19
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	16	8	19	19	20	4	19	21	19
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	17	6	23	21	19	6	21	24	21
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	18	5	21	24	21	6	20	29	20
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	19	7	22	27	22	7	19	28	19
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	20	6	21	27	19	5	19	28	20
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	21	6	20	26	21	5	19	23	20
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	22	8	20	21	19	6	20	25	19
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	23	8	21	25	23	8	19	29	19
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	24	5	19	29	21	13	22	23	20
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	25	9	21	27	21	5	19	21	23

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**Positive and Negative Controls for *In Vitro* Sister Chromatid Exchange Assay with (+) and without (-) S9 Metabolic Activation  
(Observations per flask)**

Assay Date	+ Control Substance Dose (µg/mL)		Treatment Schedule	Treatment Time (h)	Metabolic Activation	Metaphase Number	Flask Number 1				Flask Number 2			
							- Control		+ Control		- Control		+ Control	
							# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	1	7	21	28	20	8	21	22	19
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	2	5	21	26	19	7	23	27	23
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	3	7	21	20	19	5	20	25	20
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	4	7	19	29	23	4	19	28	22
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	5	6	21	28	20	7	21	25	23
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	6	4	20	20	22	7	20	23	20
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	7	5	19	24	20	5	19	22	19
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	8	5	20	23	19	8	23	28	22
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	9	7	23	25	19	5	21	19	20
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	10	6	20	22	21	7	19	23	21
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	11	6	19	26	20	6	20	24	23
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	12	5	22	20	22	8	23	27	22
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	13	8	20	19	23	6	22	28	19
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	14	7	19	25	20	5	21	30	20
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	15	4	23	27	19	7	22	23	23
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	16	6	19	29	22	6	21	21	20
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	17	5	22	28	20	7	23	27	23
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	18	5	20	26	23	6	20	25	19
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	19	7	19	20	20	8	22	27	21
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	20	6	19	29	19	8	20	29	23
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	21	8	21	24	19	7	23	22	20
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	22	7	23	26	21	5	21	28	20
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	23	7	20	29	23	4	19	29	22
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	24	7	19	30	23	6	21	22	19
23-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	25	7	22	22	23	9	20	28	21

**LABSTAT INTERNATIONAL ULC**

262 Manitou Drive, Kitchener, Ontario, Canada N2C 1L3

Phone (519) 748-5409 FAX (519) 748-1654

Project: M125

Period: February 4 - March 30, 2010

**Positive and Negative Controls for *In Vitro* Sister Chromatid Exchange Assay with (+) and without (-) S9 Metabolic Activation  
(Observations per flask)**

Assay Date	+ Control Substance Dose (µg/mL)		Treatment Schedule	Treatment Time (h)	Metabolic Activation	Metaphase Number	Flask Number 1				Flask Number 2			
							- Control		+ Control		- Control		+ Control	
							# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes
25-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	1	4	22	27	19	7	20	25	20
25-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	2	4	19	26	20	6	21	23	19
25-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	3	7	20	29	19	5	19	22	19
25-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	4	6	22	22	20	7	20	20	19
25-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	5	7	21	30	23	6	19	24	23
25-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	6	6	20	27	20	7	19	21	22
25-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	7	6	19	28	22	6	20	21	20
25-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	8	7	20	18	23	4	19	20	22
25-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	9	4	19	22	21	3	21	29	21
25-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	10	5	22	27	19	8	19	27	21
25-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	11	7	20	19	20	5	19	28	20
25-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	12	5	19	30	22	9	20	20	22
25-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	13	7	19	26	19	8	19	17	23
25-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	14	5	19	29	20	7	19	29	23
25-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	15	6	21	32	19	8	19	23	22
25-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	16	6	22	29	23	6	20	28	20
25-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	17	6	20	27	20	4	19	30	21
25-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	18	6	21	20	19	1	20	25	21
25-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	19	6	19	19	21	8	21	24	20
25-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	20	5	19	24	23	7	19	23	20
25-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	21	7	22	28	20	6	20	22	20
25-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	22	7	20	20	19	5	19	20	19
25-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	23	6	19	19	22	7	20	26	19
25-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	24	7	23	19	21	6	19	29	21
25-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	25	7	20	30	23	5	19	31	20

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Project: M125

Period: February 4 - March 30, 2010

**Positive and Negative Controls for *In Vitro* Sister Chromatid Exchange Assay with (+) and without (-) S9 Metabolic Activation  
(Observations per flask)**

Assay Date	+ Control Substance Dose (µg/mL)		Treatment Schedule	Treatment Time (h)	Metabolic Activation	Metaphase Number	Flask Number 1				Flask Number 2			
							- Control		+ Control		- Control		+ Control	
							# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes
30-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	1	6	20	25	21	3	21	28	20
30-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	2	7	19	23	20	6	20	22	21
30-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	3	8	21	22	19	7	19	25	23
30-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	4	9	23	27	20	7	19	27	20
30-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	5	6	21	19	22	5	20	19	22
30-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	6	5	22	23	23	8	22	22	19
30-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	7	6	23	24	20	8	20	17	20
30-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	8	5	21	27	23	6	19	28	19
30-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	9	7	22	28	23	9	20	25	19
30-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	10	8	20	27	22	7	19	18	19
30-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	11	6	21	23	20	4	21	19	21
30-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	12	5	22	21	19	7	20	24	20
30-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	13	7	21	27	23	5	19	25	19
30-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	14	7	22	25	19	8	19	20	19
30-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	15	8	20	27	19	7	20	23	19
30-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	16	7	21	28	22	7	19	21	21
30-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	17	7	20	29	23	6	20	29	23
30-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	18	6	20	28	21	8	23	30	19
30-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	19	9	22	19	20	9	19	22	19
30-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	20	6	19	23	22	8	21	19	20
30-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	21	8	22	24	19	6	20	28	19
30-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	22	9	19	27	22	8	19	23	19
30-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	23	7	23	24	19	9	20	27	19
30-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	24	6	19	25	21	8	22	29	20
30-Mar-10	Mitomycin C	0.005	Schedule (i)	30	-S9	25	5	20	29	22	9	20	31	20

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**Positive and Negative Controls for *In Vitro* Sister Chromatid Exchange Assay with (+) and without (-) S9 Metabolic Activation  
(Observations per flask)**

Assay Date	+ Control Substance Dose (µg/mL)		Treatment Schedule	Treatment Time (h)	Metabolic Activation	Metaphase Number	Flask Number 1				Flask Number 2			
							- Control		+ Control		- Control		+ Control	
							# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	1	7	20	22	22	9	20	27	19
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	2	5	21	25	20	7	22	21	19
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	3	8	20	21	19	6	22	20	21
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	4	3	19	20	23	5	20	25	19
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	5	6	21	19	21	5	19	19	22
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	6	7	20	23	20	8	19	16	19
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	7	4	22	25	20	4	19	23	19
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	8	6	19	27	19	9	21	25	19
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	9	8	21	21	20	7	23	20	19
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	10	5	20	25	21	7	20	20	21
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	11	7	23	26	22	5	21	20	21
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	12	5	19	22	23	5	22	21	20
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	13	6	21	18	22	6	19	24	20
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	14	4	22	21	21	5	19	19	21
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	15	7	20	17	20	8	21	19	20
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	16	6	23	25	21	8	21	23	21
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	17	7	22	20	21	4	20	21	21
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	18	8	19	22	21	8	20	22	22
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	19	4	20	21	20	7	20	24	23
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	20	7	23	18	19	8	19	23	23
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	21	8	22	24	23	9	19	19	20
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	22	8	21	19	23	6	20	25	23
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	23	8	20	22	22	7	20	21	19
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	24	4	19	22	22	5	23	20	22
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	25	8	19	17	21	5	21	20	20

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**Positive and Negative Controls for *In Vitro* Sister Chromatid Exchange Assay with (+) and without (-) S9 Metabolic Activation  
(Observations per flask)**

Assay Date	+ Control Substance Dose (µg/mL)		Treatment Schedule	Treatment Time (h)	Metabolic Activation	Metaphase Number	Flask Number 1				Flask Number 2			
							- Control		+ Control		- Control		+ Control	
							# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	1	6	22	24	23	6	23	19	20
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	2	7	21	19	21	5	19	21	23
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	3	4	19	20	23	6	22	26	20
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	4	6	23	23	20	8	20	23	23
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	5	8	21	23	19	7	23	22	21
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	6	8	20	22	21	9	19	21	20
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	7	4	19	20	19	8	19	17	19
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	8	6	19	21	23	6	22	16	23
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	9	6	23	19	21	8	20	15	20
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	10	4	20	25	19	7	23	25	21
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	11	4	21	29	23	5	21	19	23
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	12	7	23	23	22	5	19	21	22
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	13	6	19	27	19	6	23	23	21
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	14	8	21	19	19	5	21	21	19
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	15	8	20	20	19	6	22	24	22
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	16	4	20	23	19	8	20	22	20
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	17	6	19	19	21	5	20	19	20
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	18	6	22	25	19	8	23	24	19
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	19	8	20	21	22	7	21	28	21
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	20	4	22	26	20	5	20	26	22
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	21	8	20	20	19	5	19	22	19
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	22	6	19	21	21	8	21	21	20
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	23	6	23	19	21	5	22	17	21
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	24	7	21	19	23	5	19	16	23
09-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	25	6	20	28	21	7	20	18	22

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**Positive and Negative Controls for *In Vitro* Sister Chromatid Exchange Assay with (+) and without (-) S9 Metabolic Activation  
(Observations per flask)**

Assay Date	+ Control Substance Dose (µg/mL)		Treatment Schedule	Treatment Time (h)	Metabolic Activation	Metaphase Number	Flask Number 1				Flask Number 2			
							- Control		+ Control		- Control		+ Control	
							# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	1	8	21	26	19	7	20	20	19
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	2	8	20	20	22	9	23	25	23
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	3	8	22	24	21	7	20	21	22
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	4	5	21	23	20	7	19	29	21
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	5	6	22	25	21	8	21	19	19
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	6	8	19	22	20	7	20	17	20
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	7	8	20	26	22	6	22	20	21
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	8	8	21	24	20	8	20	17	19
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	9	8	19	21	21	8	19	18	23
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	10	6	20	19	20	6	23	19	20
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	11	9	22	25	22	7	20	26	19
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	12	7	19	22	21	9	22	23	21
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	13	5	22	21	19	6	20	25	22
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	14	8	20	19	19	6	19	21	20
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	15	6	20	23	22	8	21	19	21
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	16	8	19	23	21	9	23	2	19
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	17	7	23	22	23	7	20	27	23
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	18	7	21	21	20	6	22	19	20
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	19	6	20	20	23	6	20	20	21
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	20	9	20	24	21	8	19	25	19
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	21	8	20	25	20	9	22	26	20
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	22	7	19	20	22	7	20	23	22
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	23	9	22	23	23	7	19	21	19
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	24	7	21	19	21	6	23	27	21
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	25	7	20	20	23	6	20	28	20

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**Positive and Negative Controls for *In Vitro* Sister Chromatid Exchange Assay with (+) and without (-) S9 Metabolic Activation  
(Observations per flask)**

Assay Date	+ Control Substance Dose (µg/mL)		Treatment Schedule	Treatment Time (h)	Metabolic Activation	Metaphase Number	Flask Number 1				Flask Number 2			
							- Control		+ Control		- Control		+ Control	
							# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	1	6	19	23	23	7	20	20	19
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	2	7	21	21	23	8	21	18	19
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	3	5	20	20	23	9	19	23	20
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	4	9	21	21	21	7	19	16	21
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	5	7	19	19	23	6	21	18	20
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	6	5	19	23	23	8	20	21	19
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	7	9	22	24	22	12	19	15	19
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	8	6	20	21	19	6	22	23	23
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	9	4	21	22	21	4	20	20	19
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	10	7	20	19	21	9	21	19	21
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	11	7	22	25	21	3	20	25	22
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	12	7	20	21	22	6	19	30	22
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	13	6	21	20	22	5	20	29	20
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	14	8	22	24	19	6	19	22	21
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	15	8	22	21	22	8	19	21	19
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	16	7	22	23	23	9	23	27	20
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	17	9	21	20	20	7	19	26	20
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	18	6	23	22	21	3	21	24	19
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	19	6	23	24	22	8	20	19	19
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	20	9	23	28	22	10	19	20	23
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	21	4	21	21	19	7	19	18	23
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	22	8	21	22	19	7	22	17	22
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	23	6	19	23	19	5	19	19	21
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	24	4	19	20	21	7	19	19	22
17-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	25	5	22	21	20	6	20	20	22

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Phone (519) 748-5409 FAX (519) 748-1654

Project: M125

Period: February 4 - March 30, 2010

**Positive and Negative Controls for *In Vitro* Sister Chromatid Exchange Assay with (+) and without (-) S9 Metabolic Activation  
(Observations per flask)**

Assay Date	+ Control Substance Dose (µg/mL)		Treatment Schedule	Treatment Time (h)	Metabolic Activation	Metaphase Number	Flask Number 1				Flask Number 2			
							- Control		+ Control		- Control		+ Control	
							# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	1	7	19	23	21	7	20	22	21
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	2	5	20	20	20	6	20	19	20
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	3	6	23	24	22	8	19	19	20
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	4	9	21	21	22	5	21	23	19
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	5	8	19	25	22	7	19	19	21
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	6	6	21	23	19	10	23	20	20
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	7	7	20	20	19	5	20	22	23
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	8	6	19	22	22	6	23	23	21
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	9	8	19	23	20	5	19	25	20
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	10	7	20	24	21	8	22	20	19
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	11	2	19	20	19	7	20	20	21
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	12	5	20	20	19	7	19	24	22
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	13	7	21	22	21	6	22	25	21
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	14	6	20	21	21	8	23	21	23
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	15	7	19	23	20	6	20	19	19
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	16	8	23	26	22	5	19	19	22
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	17	5	19	25	20	10	22	18	20
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	18	9	20	20	20	7	20	19	19
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	19	8	19	23	21	7	19	23	22
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	20	9	20	22	21	8	21	20	21
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	21	6	19	24	23	8	20	17	23
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	22	4	19	21	23	8	19	22	19
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	23	5	23	19	20	6	23	20	22
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	24	6	22	21	20	10	20	22	19
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	25	7	21	19	20	6	19	25	21

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Project: M125

Period: February 4 - March 30, 2010

**Positive and Negative Controls for *In Vitro* Sister Chromatid Exchange Assay with (+) and without (-) S9 Metabolic Activation  
(Observations per flask)**

Assay Date	+ Control Substance Dose (µg/mL)		Treatment Schedule	Treatment Time (h)	Metabolic Activation	Metaphase Number	Flask Number 1				Flask Number 2			
							- Control		+ Control		- Control		+ Control	
							# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	1	9	19	20	22	7	20	21	20
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	2	5	20	21	22	8	21	24	23
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	3	4	20	19	20	8	19	29	21
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	4	6	20	25	21	5	20	18	19
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	5	7	22	26	21	4	22	22	19
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	6	8	21	21	20	8	20	23	21
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	7	7	23	18	22	7	21	20	22
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	8	7	19	19	20	8	21	18	19
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	9	7	21	19	21	6	19	21	20
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	10	9	23	17	22	5	21	22	21
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	11	6	19	24	20	5	21	24	20
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	12	5	19	18	21	8	20	21	22
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	13	7	21	21	22	4	22	23	21
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	14	9	20	20	23	7	21	26	19
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	15	6	22	23	21	6	20	22	22
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	16	5	22	26	23	6	20	24	22
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	17	9	22	29	21	8	20	19	20
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	18	7	20	27	20	7	20	23	21
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	19	7	21	21	22	5	21	22	20
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	20	8	21	24	19	9	20	21	21
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	21	5	20	23	19	7	20	21	21
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	22	5	22	20	23	8	22	20	20
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	23	6	23	20	21	8	20	24	19
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	24	5	21	21	20	4	20	19	20
25-Feb-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	25	6	20	22	19	6	20	22	20

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Project: M125

Period: February 4 - March 30, 2010

**Positive and Negative Controls for *In Vitro* Sister Chromatid Exchange Assay with (+) and without (-) S9 Metabolic Activation  
(Observations per flask)**

Assay Date	+ Control Substance Dose (µg/mL)		Treatment Schedule	Treatment Time (h)	Metabolic Activation	Metaphase Number	Flask Number 1				Flask Number 2			
							- Control		+ Control		- Control		+ Control	
							# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	1	5	20	19	22	6	23	23	22
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	2	6	21	17	20	7	19	20	21
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	3	6	23	18	23	8	19	21	22
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	4	8	22	22	22	8	22	19	21
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	5	7	19	23	19	5	23	20	19
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	6	6	20	22	20	9	20	25	22
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	7	5	21	18	19	7	19	23	21
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	8	4	20	22	21	7	23	22	20
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	9	8	20	19	19	6	20	20	23
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	10	7	22	19	20	8	22	21	21
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	11	6	21	18	23	7	20	26	20
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	12	7	22	22	21	9	19	23	23
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	13	4	19	22	19	8	21	22	23
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	14	6	20	17	20	5	20	21	19
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	15	7	21	26	20	5	22	17	23
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	16	5	22	18	20	6	20	16	21
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	17	5	19	24	19	9	19	15	20
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	18	8	21	17	19	7	23	24	21
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	19	8	21	18	22	7	20	19	19
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	20	6	22	19	21	7	19	21	22
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	21	8	21	22	20	9	22	22	21
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	22	7	22	19	20	6	20	23	19
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	23	5	20	16	19	8	19	18	21
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	24	5	20	22	20	5	21	24	22
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	25	4	19	24	23	9	20	22	19

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**Positive and Negative Controls for *In Vitro* Sister Chromatid Exchange Assay with (+) and without (-) S9 Metabolic Activation  
(Observations per flask)**

Assay Date	+ Control Substance Dose (µg/mL)		Treatment Schedule	Treatment Time (h)	Metabolic Activation	Metaphase Number	Flask Number 1				Flask Number 2			
							- Control		+ Control		- Control		+ Control	
							# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	1	6	19	18	22	5	21	19	22
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	2	8	20	23	22	5	21	24	21
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	3	5	22	20	22	7	20	27	20
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	4	4	20	17	21	4	20	19	20
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	5	6	19	22	23	6	22	20	20
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	6	7	20	23	21	8	23	25	19
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	7	5	19	25	19	5	20	20	19
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	8	6	19	20	19	5	19	23	20
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	9	8	21	21	19	6	23	22	20
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	10	4	20	24	19	6	19	19	19
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	11	7	20	17	20	8	22	24	22
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	12	9	19	18	19	6	21	21	21
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	13	6	19	22	22	4	21	26	19
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	14	8	21	26	19	7	21	22	22
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	15	6	20	22	19	7	22	19	20
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	16	4	19	24	19	6	22	22	20
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	17	5	20	25	21	4	21	24	21
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	18	4	19	20	23	6	20	21	19
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	19	5	19	21	23	8	19	21	19
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	20	6	20	24	20	8	20	20	19
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	21	7	19	18	20	6	20	26	20
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	22	7	19	20	21	4	20	22	22
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	23	5	20	23	20	6	19	21	21
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	24	8	19	25	22	7	22	20	20
04-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	25	8	19	22	22	5	22	20	19

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**Positive and Negative Controls for *In Vitro* Sister Chromatid Exchange Assay with (+) and without (-) S9 Metabolic Activation  
(Observations per flask)**

Assay Date	+ Control Substance Dose (µg/mL)		Treatment Schedule	Treatment Time (h)	Metabolic Activation	Metaphase Number	Flask Number 1				Flask Number 2			
							- Control		+ Control		- Control		+ Control	
							# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	1	5	20	20	23	9	21	21	21
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	2	6	22	28	20	7	23	19	23
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	3	9	19	21	19	8	19	20	20
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	4	8	19	19	23	7	23	19	22
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	5	5	19	25	19	8	22	21	23
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	6	6	19	20	19	5	23	24	19
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	7	8	21	19	20	7	19	20	23
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	8	5	20	19	20	7	21	24	19
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	9	2	20	19	20	9	19	23	21
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	10	6	21	26	21	5	22	25	19
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	11	7	23	23	20	8	23	19	22
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	12	5	20	20	19	8	19	21	20
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	13	9	22	20	19	7	23	24	19
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	14	6	23	20	19	5	21	20	20
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	15	5	19	19	19	6	20	21	20
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	16	7	20	23	19	8	19	18	21
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	17	5	20	27	20	5	21	25	23
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	18	8	20	22	21	8	19	19	20
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	19	6	19	23	19	7	21	21	22
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	20	9	19	21	19	8	22	23	23
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	21	12	21	19	20	7	19	22	19
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	22	5	21	17	21	5	20	19	23
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	23	6	20	25	20	6	23	21	22
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	24	5	22	21	20	6	19	27	20
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	25	12	19	20	20	8	23	21	22

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(Observations per flask)**

Assay Date	+ Control Substance Dose (µg/mL)		Treatment Schedule	Treatment Time (h)	Metabolic Activation	Metaphase Number	Flask Number 1				Flask Number 2			
							- Control		+ Control		- Control		+ Control	
							# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	1	5	21	23	21	7	19	23	19
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	2	5	20	20	19	5	21	26	19
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	3	7	21	24	23	5	21	25	19
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	4	9	21	27	19	4	20	28	20
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	5	9	19	21	20	6	21	21	21
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	6	8	21	23	22	5	22	20	20
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	7	8	19	20	19	8	21	20	19
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	8	4	21	20	22	9	22	18	19
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	9	9	20	19	20	6	22	19	20
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	10	7	19	19	23	5	20	16	21
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	11	6	21	21	20	8	21	21	21
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	12	7	19	25	20	7	19	21	22
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	13	6	22	22	19	7	19	20	20
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	14	8	19	23	19	6	19	23	23
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	15	6	22	21	19	8	19	24	21
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	16	7	21	19	22	6	20	19	19
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	17	6	20	19	20	5	19	24	19
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	18	8	21	23	19	6	22	26	19
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	19	8	19	20	19	6	19	20	19
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	20	7	20	23	19	8	20	23	21
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	21	8	20	18	20	6	20	21	19
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	22	5	20	18	19	7	22	22	21
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	23	8	21	22	21	8	21	26	19
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	24	9	22	19	20	8	20	21	19
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	25	7	19	19	20	9	23	24	22

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262 Manitou Drive, Kitchener, Ontario, Canada N2C 1L3

Phone (519) 748-5409 FAX (519) 748-1654

Project: M125

Period: February 4 - March 30, 2010

**Positive and Negative Controls for *In Vitro* Sister Chromatid Exchange Assay with (+) and without (-) S9 Metabolic Activation  
(Observations per flask)**

Assay Date	+ Control Substance Dose (µg/mL)		Treatment Schedule	Treatment Time (h)	Metabolic Activation	Metaphase Number	Flask Number 1				Flask Number 2			
							- Control		+ Control		- Control		+ Control	
							# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	1	8	23	21	20	7	19	20	20
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	2	5	22	21	22	6	20	22	20
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	3	6	22	21	20	4	19	15	21
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	4	7	21	18	21	5	19	23	20
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	5	6	21	22	21	6	21	18	19
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	6	4	23	23	22	7	20	30	20
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	7	6	21	18	21	7	23	24	21
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	8	9	22	25	19	9	20	20	19
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	9	7	22	22	20	8	19	24	19
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	10	8	20	20	20	2	19	20	21
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	11	8	21	23	19	5	20	21	20
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	12	6	20	21	22	5	23	20	20
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	13	9	22	19	22	6	21	20	23
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	14	6	20	19	21	6	20	23	21
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	15	6	19	24	19	5	19	25	20
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	16	8	19	22	20	9	19	20	19
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	17	6	20	21	20	7	21	26	19
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	18	4	20	21	20	4	19	27	23
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	19	5	19	22	19	6	20	28	22
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	20	6	20	20	22	5	19	21	20
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	21	5	19	22	21	6	19	19	21
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	22	6	20	26	22	7	20	29	20
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	23	5	21	20	21	9	19	20	19
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	24	6	20	19	20	8	19	21	19
11-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	25	7	19	20	22	10	20	24	19

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Project: M125

Period: February 4 - March 30, 2010

**Positive and Negative Controls for *In Vitro* Sister Chromatid Exchange Assay with (+) and without (-) S9 Metabolic Activation  
(Observations per flask)**

Assay Date	+ Control Substance Dose (µg/mL)		Treatment Schedule	Treatment Time (h)	Metabolic Activation	Metaphase Number	Flask Number 1				Flask Number 2			
							- Control		+ Control		- Control		+ Control	
							# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	1	7	19	19	23	6	19	23	20
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	2	9	20	25	20	9	20	21	20
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	3	2	20	28	20	8	20	19	20
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	4	8	19	26	19	8	22	25	20
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	5	8	19	27	20	8	23	24	21
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	6	9	20	21	20	6	19	23	21
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	7	7	20	17	22	8	20	22	19
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	8	8	19	26	21	8	20	25	20
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	9	6	19	23	20	9	19	26	19
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	10	5	20	22	20	8	20	26	20
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	11	8	21	25	19	9	21	21	22
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	12	7	20	26	21	9	20	19	19
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	13	7	19	19	21	5	21	24	21
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	14	10	19	20	21	7	21	21	22
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	15	8	19	23	23	8	22	25	22
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	16	7	19	23	21	7	21	24	19
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	17	6	19	25	20	6	19	24	20
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	18	10	19	24	20	8	19	22	20
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	19	5	21	20	19	8	21	26	21
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	20	2	21	22	21	4	22	20	22
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	21	7	20	18	19	7	21	22	19
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	22	9	20	29	19	4	20	25	22
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	23	8	19	21	19	8	19	23	19
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	24	3	20	20	19	4	22	22	20
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	25	6	20	19	19	6	20	24	21

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**Positive and Negative Controls for *In Vitro* Sister Chromatid Exchange Assay with (+) and without (-) S9 Metabolic Activation  
(Observations per flask)**

Assay Date	+ Control Substance Dose (µg/mL)		Treatment Schedule	Treatment Time (h)	Metabolic Activation	Metaphase Number	Flask Number 1				Flask Number 2			
							- Control		+ Control		- Control		+ Control	
							# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	1	7	20	24	19	7	21	22	21
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	2	9	21	22	21	5	23	21	23
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	3	5	23	20	19	9	19	24	20
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	4	7	20	19	22	7	23	20	22
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	5	7	22	19	20	6	22	21	23
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	6	8	20	23	19	8	23	18	19
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	7	6	19	16	19	8	19	25	23
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	8	9	19	24	22	9	21	19	19
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	9	9	21	19	20	5	19	21	21
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	10	7	23	17	19	8	22	23	19
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	11	8	20	26	23	5	23	22	22
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	12	7	19	23	19	8	19	29	20
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	13	8	22	21	19	9	23	21	19
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	14	8	20	16	19	8	21	25	20
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	15	6	19	22	22	7	20	21	20
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	16	9	19	18	21	5	19	20	21
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	17	9	21	19	23	8	21	19	23
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	18	8	23	26	19	9	19	22	20
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	19	7	20	21	19	6	21	19	22
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	20	9	22	20	19	7	22	21	23
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	21	9	20	24	19	8	19	24	19
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	22	8	19	25	19	5	20	20	23
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	23	6	23	19	21	8	23	27	22
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	24	7	23	16	23	7	19	23	20
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	25	9	20	20	20	5	23	25	22

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(Observations per flask)**

Assay Date	+ Control Substance Dose (µg/mL)		Treatment Schedule	Treatment Time (h)	Metabolic Activation	Metaphase Number	Flask Number 1				Flask Number 2			
							- Control		+ Control		- Control		+ Control	
							# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	1	7	19	23	22	8	21	19	20
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	2	6	22	20	19	5	23	22	21
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	3	4	23	19	21	9	23	21	20
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	4	5	20	24	20	7	20	24	23
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	5	7	19	22	19	7	19	23	22
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	6	6	20	20	23	6	20	20	19
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	7	8	23	19	20	9	21	23	22
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	8	7	20	19	19	8	20	25	23
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	9	7	20	23	19	7	23	18	21
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	10	7	19	20	21	5	20	21	19
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	11	6	23	22	20	9	20	23	22
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	12	8	20	23	20	6	21	25	20
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	13	7	22	20	19	8	20	22	21
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	14	9	21	25	19	7	22	23	19
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	15	8	20	23	19	5	21	19	23
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	16	8	19	21	20	6	23	24	21
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	17	6	23	20	21	7	19	21	23
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	18	5	21	24	20	6	21	23	21
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	19	7	20	23	19	7	22	21	19
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	20	6	22	19	19	9	20	24	20
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	21	7	20	17	22	5	19	19	19
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	22	7	23	20	20	6	23	21	20
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	23	9	20	17	19	5	19	17	21
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	24	8	19	19	21	8	22	20	23
18-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	25	9	19	23	20	8	23	18	22

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(Observations per flask)**

Assay Date	+ Control Substance Dose (µg/mL)		Treatment Schedule	Treatment Time (h)	Metabolic Activation	Metaphase Number	Flask Number 1				Flask Number 2			
							- Control		+ Control		- Control		+ Control	
							# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	1	9	22	23	19	7	19	23	23
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	2	10	20	25	19	5	20	20	19
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	3	8	21	20	22	6	20	18	19
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	4	8	22	16	19	5	21	23	21
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	5	9	22	19	23	9	20	21	20
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	6	7	20	20	21	6	21	24	19
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	7	7	20	23	21	9	19	22	20
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	8	6	21	16	20	5	19	19	21
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	9	5	20	19	22	6	20	17	20
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	10	9	21	20	19	6	20	15	23
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	11	8	19	23	19	9	20	20	19
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	12	7	19	20	21	6	19	22	19
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	13	9	19	21	19	7	19	24	20
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	14	9	20	24	19	4	21	16	21
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	15	5	19	22	19	6	20	18	23
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	16	6	22	21	21	7	19	19	20
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	17	7	19	19	20	4	20	24	19
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	18	4	22	17	20	8	20	20	19
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	19	5	21	20	21	12	20	18	22
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	20	8	21	18	19	5	20	17	20
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	21	5	20	21	22	13	22	22	23
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	22	7	19	22	19	8	23	18	20
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	23	6	19	21	19	7	20	21	23
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	24	7	19	23	20	14	21	16	20
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	25	9	19	19	20	10	20	24	19

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(Observations per flask)**

Assay Date	+ Control Substance Dose (µg/mL)		Treatment Schedule	Treatment Time (h)	Metabolic Activation	Metaphase Number	Flask Number 1				Flask Number 2			
							- Control		+ Control		- Control		+ Control	
							# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	1	7	23	21	20	6	20	18	19
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	2	4	22	24	21	8	20	23	22
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	3	5	23	25	21	9	22	17	20
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	4	7	19	21	23	5	19	21	23
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	5	5	21	18	19	7	21	20	21
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	6	6	23	21	21	9	20	26	22
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	7	7	19	25	19	6	23	21	23
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	8	8	23	19	22	4	23	17	21
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	9	5	19	26	23	4	23	16	20
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	10	6	23	24	20	4	22	19	22
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	11	5	19	23	22	8	20	18	19
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	12	7	22	20	23	6	21	19	19
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	13	8	19	21	19	9	19	20	19
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	14	5	21	25	23	7	22	22	21
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	15	7	20	19	20	5	20	24	19
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	16	7	20	21	21	6	23	21	22
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	17	5	19	23	19	9	23	26	19
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	18	8	20	22	21	6	22	23	21
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	19	5	22	27	23	5	22	24	23
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	20	7	23	21	20	5	20	20	23
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	21	5	21	25	21	8	20	19	21
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	22	6	19	21	23	8	19	20	20
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	23	6	20	19	19	7	22	24	20
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	24	7	23	20	21	7	22	21	20
24-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	25	5	20	19	20	9	21	22	21

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(Observations per flask)**

Assay Date	+ Control Substance Dose (µg/mL)		Treatment Schedule	Treatment Time (h)	Metabolic Activation	Metaphase Number	Flask Number 1				Flask Number 2			
							- Control		+ Control		- Control		+ Control	
							# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes
25-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	1	7	19	25	22	5	19	16	20
25-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	2	3	19	24	19	9	20	28	23
25-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	3	5	21	19	19	4	20	23	19
25-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	4	5	21	23	19	8	19	21	19
25-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	5	6	21	22	21	4	19	27	20
25-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	6	9	21	21	19	3	21	25	20
25-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	7	6	21	20	21	9	22	19	22
25-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	8	8	20	21	20	6	20	23	20
25-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	9	7	20	23	23	6	19	21	19
25-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	10	6	20	20	19	7	20	24	19
25-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	11	5	22	23	19	9	23	18	21
25-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	12	6	21	19	19	8	19	26	22
25-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	13	9	22	21	22	8	19	22	20
25-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	14	6	22	18	21	8	20	23	21
25-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	15	8	21	23	23	4	21	20	19
25-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	16	4	21	24	23	9	20	15	19
25-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	17	4	21	17	23	6	19	21	19
25-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	18	7	20	19	20	4	21	20	19
25-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	19	8	20	21	20	9	23	26	23
25-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	20	4	19	22	20	5	20	17	22
25-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	21	5	19	21	20	8	19	27	20
25-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	22	8	22	19	19	4	19	20	19
25-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	23	6	19	25	21	7	20	18	20
25-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	24	8	23	17	22	9	19	19	20
25-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	25	8	23	22	22	8	20	15	19

**LABSTAT INTERNATIONAL ULC**

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Project: M125

Period: February 4 - March 30, 2010

**Positive and Negative Controls for *In Vitro* Sister Chromatid Exchange Assay with (+) and without (-) S9 Metabolic Activation  
(Observations per flask)**

Assay Date	+ Control Substance Dose (µg/mL)		Treatment Schedule	Treatment Time (h)	Metabolic Activation	Metaphase Number	Flask Number 1				Flask Number 2			
							- Control		+ Control		- Control		+ Control	
							# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes	# of SCE	Number of chromosomes
30-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	1	7	20	21	23	7	19	20	23
30-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	2	6	20	20	19	6	20	23	21
30-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	3	7	20	18	21	5	22	19	22
30-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	4	8	20	21	19	8	19	26	20
30-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	5	9	23	18	20	5	19	22	19
30-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	6	7	21	25	21	6	20	19	19
30-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	7	8	20	19	19	4	23	24	19
30-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	8	7	22	21	23	9	19	22	21
30-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	9	9	19	23	20	8	20	20	19
30-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	10	7	23	22	22	5	21	18	19
30-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	11	6	20	21	23	6	19	19	20
30-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	12	6	19	22	19	8	19	23	21
30-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	13	5	22	25	23	7	21	19	20
30-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	14	7	20	20	19	6	20	26	19
30-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	15	7	23	21	19	5	23	21	19
30-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	16	6	21	19	23	4	19	27	20
30-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	17	8	20	22	21	8	19	22	19
30-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	18	7	19	18	20	6	20	17	19
30-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	19	5	22	21	21	7	19	18	21
30-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	20	5	20	25	23	4	21	23	20
30-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	21	6	19	21	21	5	23	19	23
30-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	22	8	23	23	22	8	20	18	19
30-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	23	5	20	24	20	6	19	28	20
30-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	24	5	21	20	21	5	20	29	21
30-Mar-10	Cyclophosphamide	1.5	Schedule (ii)	3	+S9	25	7	20	22	23	4	21	26	20

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Project: M125

Period: February 4 - March 30, 2010

**Positive and Negative Controls for *In Vitro* Sister Chromatid Exchange Assay with (+) and without (-) S9 Metabolic Activation**  
**(Average Observations per flask)**

Control Substance	Assay Date	Treatment Schedule	Treatment Time (h)	Metabolic Activation	Concentration (µg/mL)	Flask Number 1					Flask Number 2				
						# of Cells	# of SCE	Number of chromosomes	SCE per cell	SCE/cell QC	# of Cells	# of SCE	Number of chromosomes	SCE per cell	SCE/cell QC
Negative Control (-)	04-Feb-10	Schedule (i)	30	-S9		25	162	519	6.48	< 10	25	153	525	6.12	< 10
	04-Feb-10	Schedule (i)	30	-S9		25	155	514	6.20	< 10	25	137	506	5.48	< 10
	11-Feb-10	Schedule (i)	30	-S9		25	142	509	5.68	< 10	25	147	514	5.88	< 10
	11-Feb-10	Schedule (i)	30	-S9		25	153	512	6.12	< 10	25	163	507	6.52	< 10
	23-Feb-10	Schedule (i)	30	-S9		25	163	512	6.52	< 10	25	170	498	6.80	< 10
	23-Feb-10	Schedule (i)	30	-S9		25	169	534	6.76	< 10	25	161	517	6.44	< 10
	02-Mar-10	Schedule (i)	30	-S9		25	162	507	6.48	< 10	25	156	517	6.24	< 10
	02-Mar-10	Schedule (i)	30	-S9		25	152	506	6.08	< 10	25	154	496	6.16	< 10
	09-Mar-10	Schedule (i)	30	-S9		25	157	496	6.28	< 10	25	163	524	6.52	< 10
	09-Mar-10	Schedule (i)	30	-S9		25	145	518	5.80	< 10	25	163	504	6.52	< 10
	09-Mar-10	Schedule (i)	30	-S9		25	164	511	6.56	< 10	25	158	516	6.32	< 10
	16-Mar-10	Schedule (i)	30	-S9		25	160	523	6.40	< 10	25	166	490	6.64	< 10
	16-Mar-10	Schedule (i)	30	-S9		25	156	497	6.24	< 10	25	168	523	6.72	< 10
	16-Mar-10	Schedule (i)	30	-S9		25	173	509	6.92	< 10	25	159	518	6.36	< 10
	23-Mar-10	Schedule (i)	30	-S9		25	157	523	6.28	< 10	25	153	492	6.12	< 10
	23-Mar-10	Schedule (i)	30	-S9		25	154	512	6.16	< 10	25	161	524	6.44	< 10
	25-Mar-10	Schedule (i)	30	-S9		25	149	507	5.96	< 10	25	151	489	6.04	< 10
	30-Mar-10	Schedule (i)	30	-S9		25	170	523	6.80	< 10	25	175	501	7.00	< 10
	09-Feb-10	Schedule (ii)	3	+S9		25	156	516	6.24	< 10	25	163	510	6.52	< 10
	09-Feb-10	Schedule (ii)	3	+S9		25	153	517	6.12	< 10	25	160	521	6.40	< 10
	17-Feb-10	Schedule (ii)	3	+S9		25	183	513	7.32	< 10	25	180	517	7.20	< 10
	17-Feb-10	Schedule (ii)	3	+S9		25	165	523	6.60	< 10	25	173	500	6.92	< 10
	25-Feb-10	Schedule (ii)	3	+S9		25	163	505	6.52	< 10	25	176	512	7.04	< 10
	25-Feb-10	Schedule (ii)	3	+S9		25	165	521	6.60	< 10	25	164	511	6.56	< 10
	04-Mar-10	Schedule (ii)	3	+S9		25	153	518	6.12	< 10	25	178	515	7.12	< 10
	04-Mar-10	Schedule (ii)	3	+S9		25	154	491	6.16	< 10	25	149	520	5.96	< 10
	11-Mar-10	Schedule (ii)	3	+S9		25	167	508	6.68	< 10	25	174	524	6.96	< 10
	11-Mar-10	Schedule (ii)	3	+S9		25	177	508	7.08	< 10	25	165	512	6.60	< 10
	11-Mar-10	Schedule (ii)	3	+S9		25	159	516	6.36	< 10	25	159	497	6.36	< 10
	18-Mar-10	Schedule (ii)	3	+S9		25	172	491	6.88	< 10	25	178	511	7.12	< 10
	18-Mar-10	Schedule (ii)	3	+S9		25	192	518	7.68	< 10	25	177	524	7.08	< 10
	18-Mar-10	Schedule (ii)	3	+S9		25	174	517	6.96	< 10	25	173	525	6.92	< 10
	24-Mar-10	Schedule (ii)	3	+S9		25	180	506	7.20	< 10	25	184	503	7.36	< 10
	24-Mar-10	Schedule (ii)	3	+S9		25	153	523	6.12	< 10	25	167	529	6.68	< 10
	25-Mar-10	Schedule (ii)	3	+S9		25	158	518	6.32	< 10	25	167	501	6.68	< 10
	30-Mar-10	Schedule (ii)	3	+S9		25	168	517	6.72	< 10	25	152	505	6.08	< 10

± Controls Summary

Revision: 0

SST-457-10

Labstat International ULC

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Project: M125

Period: February 4 - March 30, 2010

**Positive and Negative Controls for *In Vitro* Sister Chromatid Exchange Assay with (+) and without (-) S9 Metabolic Activation**  
**(Average Observations per flask)**

Control Substance	Assay Date	Treatment Schedule	Treatment Time (h)	Metabolic Activation	Concentration (µg/mL)	Flask Number 1					Flask Number 2				
						# of Cells	# of SCE	Number of chromosomes	SCE per cell	SCE/cell QC	# of Cells	# of SCE	Number of chromosomes	SCE per cell	SCE/cell QC
Positive Control (+)															
Mitomycin C	04-Feb-10	Schedule (i)	30	-S9	0.005	25	608	509	24.3	↑ ≥ 2-fold	25	586	523	23.4	↑ ≥ 2-fold
	04-Feb-10	Schedule (i)	30	-S9	0.005	25	592	512	23.7	↑ ≥ 2-fold	25	579	515	23.2	↑ ≥ 2-fold
	11-Feb-10	Schedule (i)	30	-S9	0.005	25	627	516	25.1	↑ ≥ 2-fold	25	630	519	25.2	↑ ≥ 2-fold
	11-Feb-10	Schedule (i)	30	-S9	0.005	25	648	520	25.9	↑ ≥ 2-fold	25	658	511	26.3	↑ ≥ 2-fold
	23-Feb-10	Schedule (i)	30	-S9	0.005	25	642	509	25.7	↑ ≥ 2-fold	25	636	514	25.4	↑ ≥ 2-fold
	23-Feb-10	Schedule (i)	30	-S9	0.005	25	630	512	25.2	↑ ≥ 2-fold	25	652	516	26.1	↑ ≥ 2-fold
	02-Mar-10	Schedule (i)	30	-S9	0.005	25	625	522	25.0	↑ ≥ 2-fold	25	636	514	25.4	↑ ≥ 2-fold
	02-Mar-10	Schedule (i)	30	-S9	0.005	25	602	508	24.1	↑ ≥ 2-fold	25	599	508	24.0	↑ ≥ 2-fold
	09-Mar-10	Schedule (i)	30	-S9	0.005	25	622	506	24.9	↑ ≥ 2-fold	25	625	524	25.0	↑ ≥ 2-fold
	09-Mar-10	Schedule (i)	30	-S9	0.005	25	616	520	24.6	↑ ≥ 2-fold	25	610	514	24.4	↑ ≥ 2-fold
	09-Mar-10	Schedule (i)	30	-S9	0.005	25	647	513	25.9	↑ ≥ 2-fold	25	635	507	25.4	↑ ≥ 2-fold
	16-Mar-10	Schedule (i)	30	-S9	0.005	25	609	524	24.4	↑ ≥ 2-fold	25	614	510	24.6	↑ ≥ 2-fold
	16-Mar-10	Schedule (i)	30	-S9	0.005	25	615	501	24.6	↑ ≥ 2-fold	25	626	525	25.0	↑ ≥ 2-fold
	16-Mar-10	Schedule (i)	30	-S9	0.005	25	614	509	24.6	↑ ≥ 2-fold	25	611	507	24.4	↑ ≥ 2-fold
	23-Mar-10	Schedule (i)	30	-S9	0.005	25	626	524	25.0	↑ ≥ 2-fold	25	620	502	24.8	↑ ≥ 2-fold
	23-Mar-10	Schedule (i)	30	-S9	0.005	25	625	519	25.0	↑ ≥ 2-fold	25	632	524	25.3	↑ ≥ 2-fold
	25-Mar-10	Schedule (i)	30	-S9	0.005	25	627	517	25.1	↑ ≥ 2-fold	25	607	517	24.3	↑ ≥ 2-fold
	30-Mar-10	Schedule (i)	30	-S9	0.005	25	624	524	25.0	↑ ≥ 2-fold	25	601	499	24.0	↑ ≥ 2-fold
Cyclophosphamide	09-Feb-10	Schedule (ii)	3	+S9	1.5	25	542	526	21.7	↑ ≥ 2-fold	25	537	513	21.5	↑ ≥ 2-fold
	09-Feb-10	Schedule (ii)	3	+S9	1.5	25	555	517	22.2	↑ ≥ 2-fold	25	526	524	21.0	↑ ≥ 2-fold
	17-Feb-10	Schedule (ii)	3	+S9	1.5	25	557	526	22.3	↑ ≥ 2-fold	25	537	514	21.5	↑ ≥ 2-fold
	17-Feb-10	Schedule (ii)	3	+S9	1.5	25	548	531	21.9	↑ ≥ 2-fold	25	529	515	21.2	↑ ≥ 2-fold
	25-Feb-10	Schedule (ii)	3	+S9	1.5	25	551	518	22.0	↑ ≥ 2-fold	25	526	518	21.0	↑ ≥ 2-fold
	25-Feb-10	Schedule (ii)	3	+S9	1.5	25	544	525	21.8	↑ ≥ 2-fold	25	549	513	22.0	↑ ≥ 2-fold
	04-Mar-10	Schedule (ii)	3	+S9	1.5	25	503	511	20.1	↑ ≥ 2-fold	25	527	525	21.1	↑ ≥ 2-fold
	04-Mar-10	Schedule (ii)	3	+S9	1.5	25	540	517	21.6	↑ ≥ 2-fold	25	547	504	21.9	↑ ≥ 2-fold
	11-Mar-10	Schedule (ii)	3	+S9	1.5	25	536	499	21.4	↑ ≥ 2-fold	25	537	526	21.5	↑ ≥ 2-fold
	11-Mar-10	Schedule (ii)	3	+S9	1.5	25	528	504	21.1	↑ ≥ 2-fold	25	551	501	22.0	↑ ≥ 2-fold
	11-Mar-10	Schedule (ii)	3	+S9	1.5	25	530	516	21.2	↑ ≥ 2-fold	25	560	505	22.4	↑ ≥ 2-fold
	18-Mar-10	Schedule (ii)	3	+S9	1.5	25	568	506	22.7	↑ ≥ 2-fold	25	576	509	23.0	↑ ≥ 2-fold
	18-Mar-10	Schedule (ii)	3	+S9	1.5	25	519	505	20.8	↑ ≥ 2-fold	25	552	526	22.1	↑ ≥ 2-fold
	18-Mar-10	Schedule (ii)	3	+S9	1.5	25	525	501	21.0	↑ ≥ 2-fold	25	536	524	21.4	↑ ≥ 2-fold
	24-Mar-10	Schedule (ii)	3	+S9	1.5	25	512	503	20.5	↑ ≥ 2-fold	25	501	512	20.0	↑ ≥ 2-fold
	24-Mar-10	Schedule (ii)	3	+S9	1.5	25	550	524	22.0	↑ ≥ 2-fold	25	521	520	20.8	↑ ≥ 2-fold
	25-Mar-10	Schedule (ii)	3	+S9	1.5	25	529	516	21.2	↑ ≥ 2-fold	25	534	504	21.4	↑ ≥ 2-fold
	30-Mar-10	Schedule (ii)	3	+S9	1.5	25	532	525	21.3	↑ ≥ 2-fold	25	548	503	21.9	↑ ≥ 2-fold

± Controls Summary

Revision: 0

SST-457-10

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Project: M125

Period: February 4 - March 30, 2010

**Positive and Negative Controls for *In Vitro* Sister Chromatid Exchange Assay with (+) and without (-) S9 Metabolic Activation  
(Average Observations per flask)**

Control Substance	Assay Date	Treatment Schedule	Treatment Time (h)	Metabolic Activation	Concentration (µg/mL)	Flask Number 1					Flask Number 2				
						# of Cells	# of SCE	Number of chromosomes	SCE per cell	SCE/cell QC	# of Cells	# of SCE	Number of chromosomes	SCE per cell	SCE/cell QC

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Period: February 4 - March 30, 2010

**Positive and Negative Controls for *In Vitro* Sister Chromatid Exchange Assay with (+) and without (-) S9 Metabolic Activation**  
**(Cell Scoring per flask)**

Control Substance	Assay Date	Treatment Schedule	Treatment Time (h)	Metabolic Activation	Concentration (µg/mL)	Flask Number 1					AGT (hours)	Flask Number 2					AGT (hours)
						Metaphases Scored						Metaphases Scored					
						M1	M1+	M2	M2+	PRI		M1	M1+	M2	M2+	PRI	
Negative Control (-)																	
	04-Feb-10	Schedule (i)	30	-S9		2	1	88	9	2.07	14.49	2	3	82	13	2.11	14.22
	04-Feb-10	Schedule (i)	30	-S9		3	0	80	17	2.14	14.02	3	0	82	15	2.12	14.15
	11-Feb-10	Schedule (i)	30	-S9		3	1	84	12	2.09	14.35	2	1	82	15	2.13	14.08
	11-Feb-10	Schedule (i)	30	-S9		3	2	82	13	2.10	14.29	2	2	79	17	2.15	13.95
	23-Feb-10	Schedule (i)	30	-S9		2	1	84	13	2.11	14.22	2	0	82	16	2.14	14.02
	23-Feb-10	Schedule (i)	30	-S9		1	2	83	14	2.13	14.08	1	1	85	13	2.12	14.15
	02-Mar-10	Schedule (i)	30	-S9		1	2	82	15	2.14	14.02	1	3	84	12	2.11	14.22
	02-Mar-10	Schedule (i)	30	-S9		2	2	83	13	2.11	14.22	1	0	83	16	2.15	13.95
	09-Mar-10	Schedule (i)	30	-S9		2	0	85	13	2.11	14.22	1	1	86	12	2.11	14.22
	09-Mar-10	Schedule (i)	30	-S9		2	3	83	12	2.10	14.29	3	1	82	14	2.11	14.22
	09-Mar-10	Schedule (i)	30	-S9		1	4	83	12	2.11	14.22	1	1	85	13	2.12	14.15
	16-Mar-10	Schedule (i)	30	-S9		1	5	81	13	2.12	14.15	2	0	84	14	2.12	14.15
	16-Mar-10	Schedule (i)	30	-S9		2	0	83	15	2.13	14.08	2	0	86	12	2.10	14.29
	16-Mar-10	Schedule (i)	30	-S9		2	1	81	16	2.14	14.02	2	0	84	14	2.12	14.15
	23-Mar-10	Schedule (i)	30	-S9		2	5	80	13	2.11	14.22	2	0	84	14	2.12	14.15
	23-Mar-10	Schedule (i)	30	-S9		3	2	79	16	2.13	14.08	1	3	84	12	2.11	14.22
	25-Mar-10	Schedule (i)	30	-S9		3	1	80	16	2.13	14.08	2	0	85	13	2.11	14.22
	30-Mar-10	Schedule (i)	30	-S9		1	1	85	13	2.12	14.15	1	0	87	12	2.11	14.22
	09-Feb-10	Schedule (ii)	3	+S9		1	1	84	14	2.13	14.08	3	1	82	14	2.11	14.22
	09-Feb-10	Schedule (ii)	3	+S9		2	0	88	10	2.08	14.42	1	4	84	11	2.10	14.29
	17-Feb-10	Schedule (ii)	3	+S9		4	2	82	12	2.08	14.42	1	2	86	11	2.10	14.29
	17-Feb-10	Schedule (ii)	3	+S9		2	1	80	17	2.15	13.95	2	1	79	18	2.16	13.89
	25-Feb-10	Schedule (ii)	3	+S9		2	1	80	17	2.15	13.95	0	4	83	13	2.13	14.08
	25-Feb-10	Schedule (ii)	3	+S9		3	1	78	18	2.15	13.95	2	4	81	13	2.11	14.22
	04-Mar-10	Schedule (ii)	3	+S9		2	2	81	15	2.13	14.08	4	2	80	14	2.10	14.29
	04-Mar-10	Schedule (ii)	3	+S9		3	0	83	14	2.11	14.22	1	0	86	13	2.12	14.15
	11-Mar-10	Schedule (ii)	3	+S9		2	0	82	16	2.14	14.02	2	0	85	13	2.11	14.22
	11-Mar-10	Schedule (ii)	3	+S9		3	2	81	14	2.11	14.22	2	2	81	15	2.13	14.08
	11-Mar-10	Schedule (ii)	3	+S9		4	1	82	13	2.09	14.35	1	0	84	15	2.14	14.02
	18-Mar-10	Schedule (ii)	3	+S9		2	0	86	12	2.10	14.29	2	1	82	15	2.13	14.08
	18-Mar-10	Schedule (ii)	3	+S9		2	1	82	15	2.13	14.08	1	0	86	13	2.12	14.15
	18-Mar-10	Schedule (ii)	3	+S9		1	0	89	10	2.09	14.35	2	1	83	14	2.12	14.15
	24-Mar-10	Schedule (ii)	3	+S9		3	0	81	16	2.13	14.08	2	0	82	16	2.14	14.02
	24-Mar-10	Schedule (ii)	3	+S9		2	4	80	14	2.12	14.15	1	1	81	17	2.16	13.89
	25-Mar-10	Schedule (ii)	3	+S9		5	0	80	15	2.10	14.29	2	0	83	15	2.13	14.08
	30-Mar-10	Schedule (ii)	3	+S9		1	0	87	12	2.11	14.22	2	1	83	14	2.12	14.15

± Controls Cell Scoring

Revision: 0

**SST-457-10**

Labstat International ULC

**LABSTAT INTERNATIONAL ULC**

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Project: M125

Period: February 4 - March 30, 2010

**Positive and Negative Controls for *In Vitro* Sister Chromatid Exchange Assay with (+) and without (-) S9 Metabolic Activation  
(Cell Scoring per flask)**

Control Substance	Assay Date	Treatment Schedule	Treatment Time (h)	Metabolic Activation	Concentration (µg/mL)	Flask Number 1						Flask Number 2					
						Metaphases Scored					AGT (hours)	Metaphases Scored					AGT (hours)
						M1	M1+	M2	M2+	PRI		M1	M1+	M2	M2+	PRI	
Positive Control (+)																	
Mitomycin C	04-Feb-10	Schedule (i)	30	-S9	0.005	26	3	70	1	1.75	17.14	24	14	61	1	1.77	16.95
	04-Feb-10	Schedule (i)	30	-S9	0.005	26	14	58	2	1.76	17.05	24	7	67	2	1.78	16.85
	11-Feb-10	Schedule (i)	30	-S9	0.005	26	12	61	1	1.75	17.14	27	9	63	1	1.74	17.24
	11-Feb-10	Schedule (i)	30	-S9	0.005	28	1	70	1	1.73	17.34	25	10	63	2	1.77	16.95
	23-Feb-10	Schedule (i)	30	-S9	0.005	29	0	68	3	1.74	17.24	28	5	64	3	1.75	17.14
	23-Feb-10	Schedule (i)	30	-S9	0.005	25	9	64	2	1.77	16.95	30	1	66	3	1.73	17.34
	02-Mar-10	Schedule (i)	30	-S9	0.005	28	8	60	4	1.76	17.05	30	3	65	2	1.72	17.44
	02-Mar-10	Schedule (i)	30	-S9	0.005	25	1	71	3	1.78	16.85	22	10	67	1	1.79	16.76
	09-Mar-10	Schedule (i)	30	-S9	0.005	29	11	53	7	1.78	16.85	24	4	71	1	1.77	16.95
	09-Mar-10	Schedule (i)	30	-S9	0.005	26	8	64	2	1.76	17.05	22	3	74	1	1.79	16.76
	09-Mar-10	Schedule (i)	30	-S9	0.005	27	9	64	0	1.73	17.34	30	2	66	2	1.72	17.44
	16-Mar-10	Schedule (i)	30	-S9	0.005	22	6	72	0	1.78	16.85	25	9	64	2	1.77	16.95
	16-Mar-10	Schedule (i)	30	-S9	0.005	29	7	62	2	1.73	17.34	24	10	66	0	1.76	17.05
	16-Mar-10	Schedule (i)	30	-S9	0.005	26	12	62	0	1.74	17.24	25	3	72	0	1.75	17.14
	23-Mar-10	Schedule (i)	30	-S9	0.005	27	5	68	0	1.73	17.34	32	8	58	2	1.70	17.65
	23-Mar-10	Schedule (i)	30	-S9	0.005	26	9	64	1	1.75	17.14	28	6	64	2	1.74	17.24
	25-Mar-10	Schedule (i)	30	-S9	0.005	26	6	68	0	1.74	17.24	25	8	65	2	1.77	16.95
	30-Mar-10	Schedule (i)	30	-S9	0.005	27	9	62	2	1.75	17.14	25	8	64	3	1.78	16.85
Cyclophosphamide	09-Feb-10	Schedule (ii)	3	+S9	1.5	25	4	67	4	1.79	16.76	28	1	69	2	1.74	17.24
	09-Feb-10	Schedule (ii)	3	+S9	1.5	23	8	67	2	1.79	16.76	17	7	75	1	1.84	16.30
	17-Feb-10	Schedule (ii)	3	+S9	1.5	27	5	65	3	1.76	17.05	31	9	55	5	1.74	17.24
	17-Feb-10	Schedule (ii)	3	+S9	1.5	30	2	66	2	1.72	17.44	28	6	62	4	1.76	17.05
	25-Feb-10	Schedule (ii)	3	+S9	1.5	28	0	69	3	1.75	17.14	23	10	67	0	1.77	16.95
	25-Feb-10	Schedule (ii)	3	+S9	1.5	26	2	70	2	1.76	17.05	25	2	71	2	1.77	16.95
	04-Mar-10	Schedule (ii)	3	+S9	1.5	25	3	70	2	1.77	16.95	22	4	74	0	1.78	16.85
	04-Mar-10	Schedule (ii)	3	+S9	1.5	28	2	68	2	1.74	17.24	25	1	73	1	1.76	17.05
	11-Mar-10	Schedule (ii)	3	+S9	1.5	19	7	69	5	1.86	16.13	21	2	77	0	1.79	16.76
	11-Mar-10	Schedule (ii)	3	+S9	1.5	24	8	67	1	1.77	16.95	26	3	70	1	1.75	17.14
	11-Mar-10	Schedule (ii)	3	+S9	1.5	24	3	70	3	1.79	16.76	26	5	67	2	1.76	17.05
	18-Mar-10	Schedule (ii)	3	+S9	1.5	28	10	60	2	1.74	17.24	24	6	70	0	1.76	17.05
	18-Mar-10	Schedule (ii)	3	+S9	1.5	25	6	69	0	1.75	17.14	24	5	71	0	1.76	17.05
	18-Mar-10	Schedule (ii)	3	+S9	1.5	24	5	71	0	1.76	17.05	24	7	67	2	1.78	16.85
	24-Mar-10	Schedule (ii)	3	+S9	1.5	26	1	71	2	1.76	17.05	28	4	66	2	1.74	17.24
	24-Mar-10	Schedule (ii)	3	+S9	1.5	22	7	71	0	1.78	16.85	27	2	68	3	1.76	17.05
	25-Mar-10	Schedule (ii)	3	+S9	1.5	28	0	70	2	1.74	17.24	27	4	67	2	1.75	17.14
	30-Mar-10	Schedule (ii)	3	+S9	1.5	26	10	62	2	1.76	17.05	22	5	72	1	1.79	16.76

± Controls Cell Scoring

Revision: 0

SST-457-10

Labstat International ULC

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Project: M125

Period: February 4 - March 30, 2010

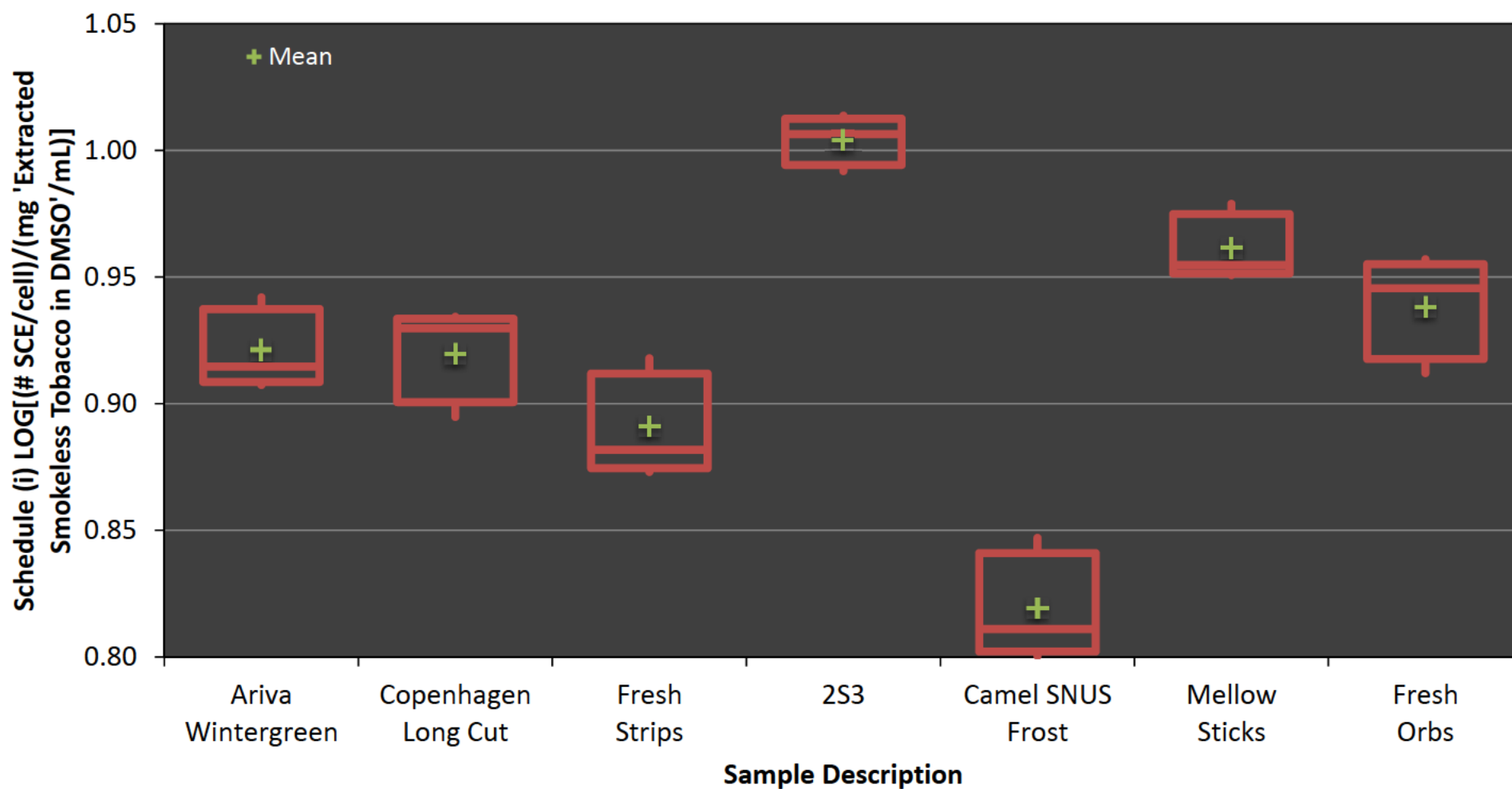
**Positive and Negative Controls for *In Vitro* Sister Chromatid Exchange Assay with (+) and without (-) S9 Metabolic Activation  
(Cell Scoring per flask)**

Control Substance	Assay Date	Treatment Schedule	Treatment Time (h)	Metabolic Activation	Concentration (µg/mL)	Flask Number 1					Flask Number 2						
						Metaphases Scored					AGT	Metaphases Scored					AGT
						M1	M1+	M2	M2+	PRI	(hours)	M1	M1+	M2	M2+	PRI	(hours)

Test Describe - Comparative

Schedule (i) LOG[(# SCE/cell)/(mg 'Extracted Smokeless Tobacco in DMSO'/mL)] by Sample Description  
Performed by Wendy Wagstaff

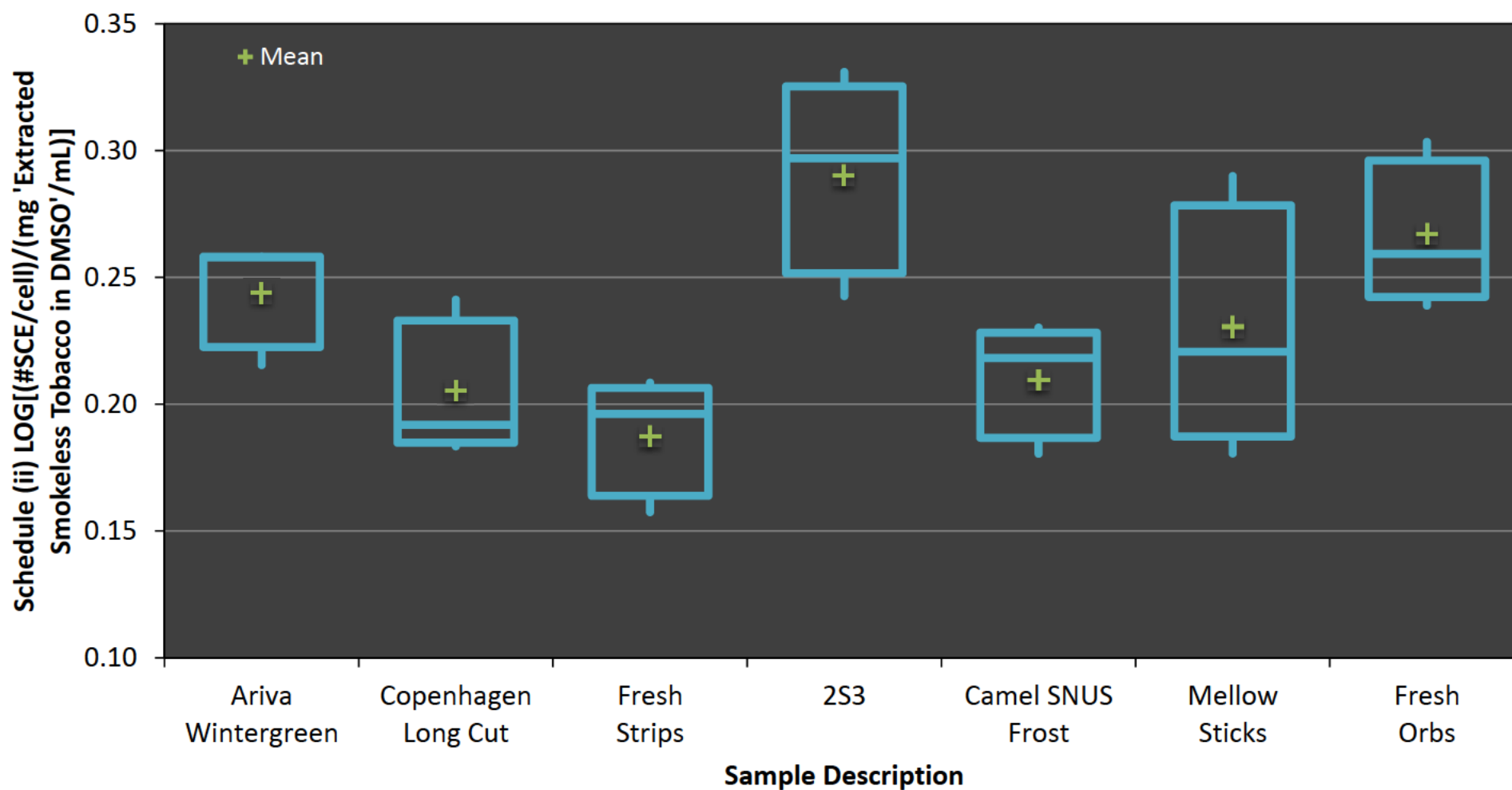
Date 16 April 2010



Test Describe - Comparative

Schedule (ii) LOG[(# SCE/cell)/(mg 'Extracted Smokeless Tobacco in DMSO'/mL)] by Sample Description  
Performed by Wendy Wagstaff

Date 16 April 2010



Test Describe - Comparative

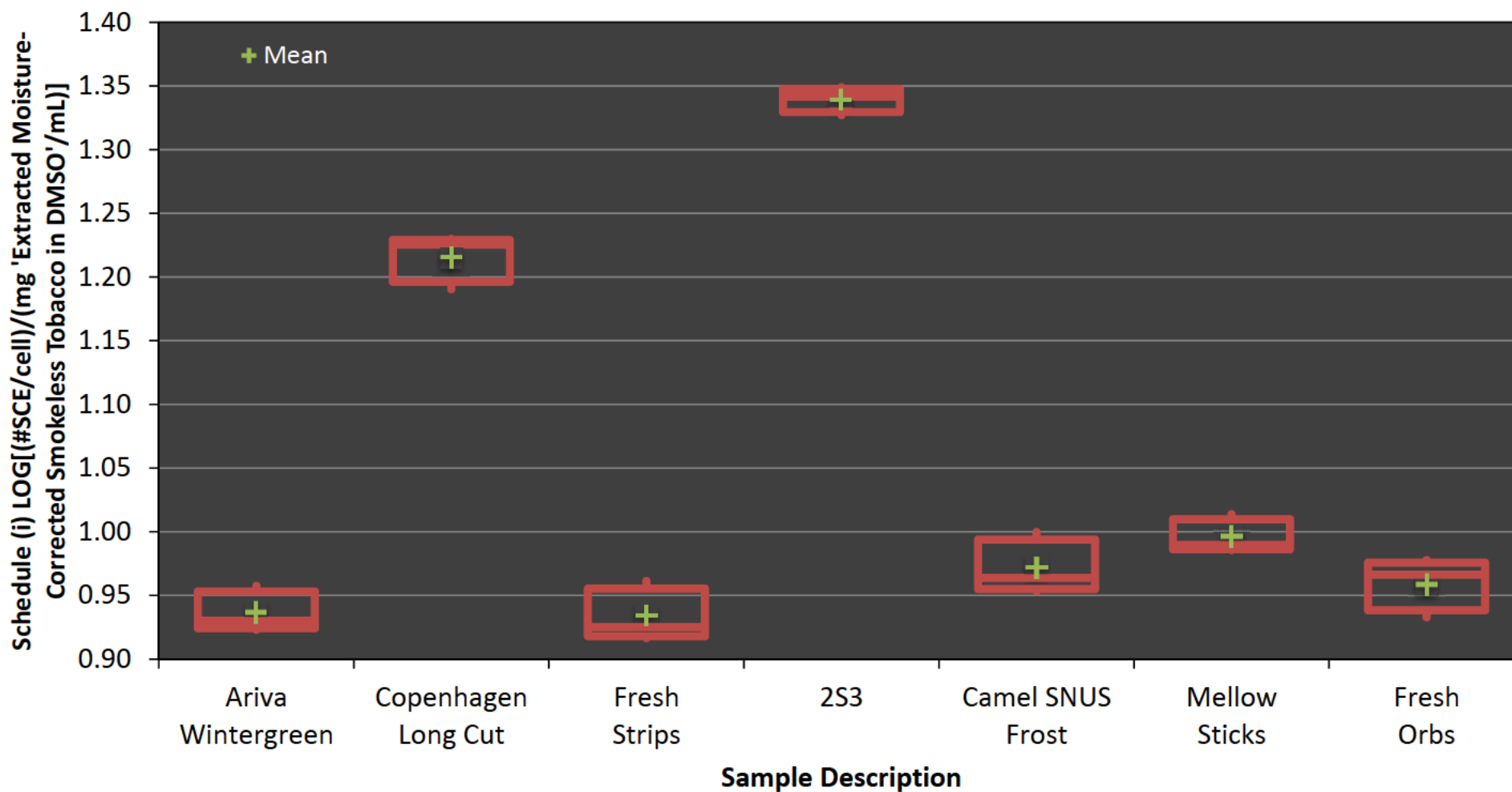
Schedule (i) LOG[(# SCE/cell)/(mg 'Extracted Moisture-Corrected Smokeless Tobacco in DMSO'/mL)] by Sample Description

Performed by

Wendy Wagstaff

Date

16 April 2010



Test Describe - Comparative

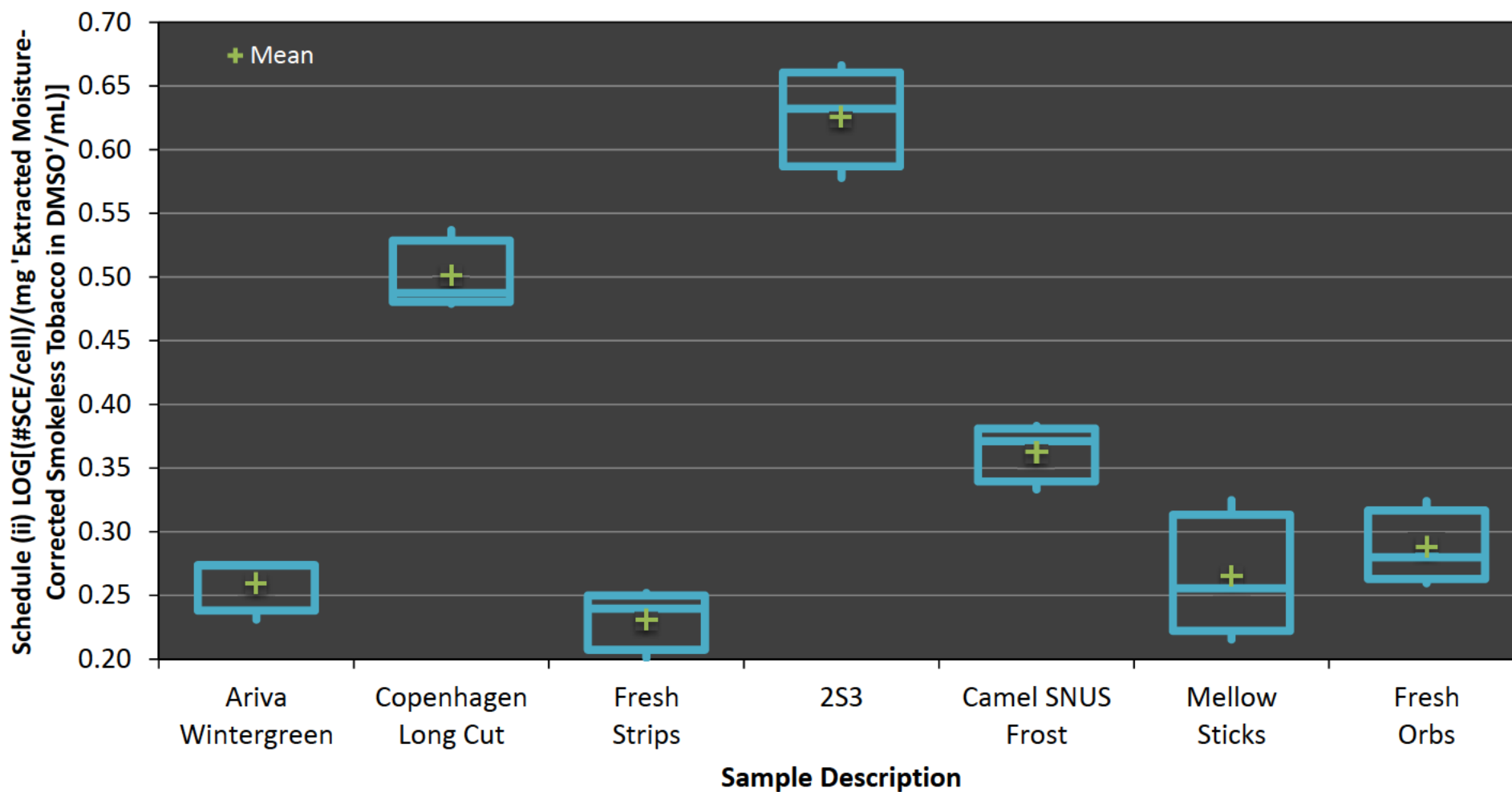
Schedule (ii) LOG[(# SCE/cell)/(mg 'Extracted Moisture-Corrected Smokeless Tobacco in DMSO'/mL)] by Sample Description

Performed by

Wendy Wagstaff

Date

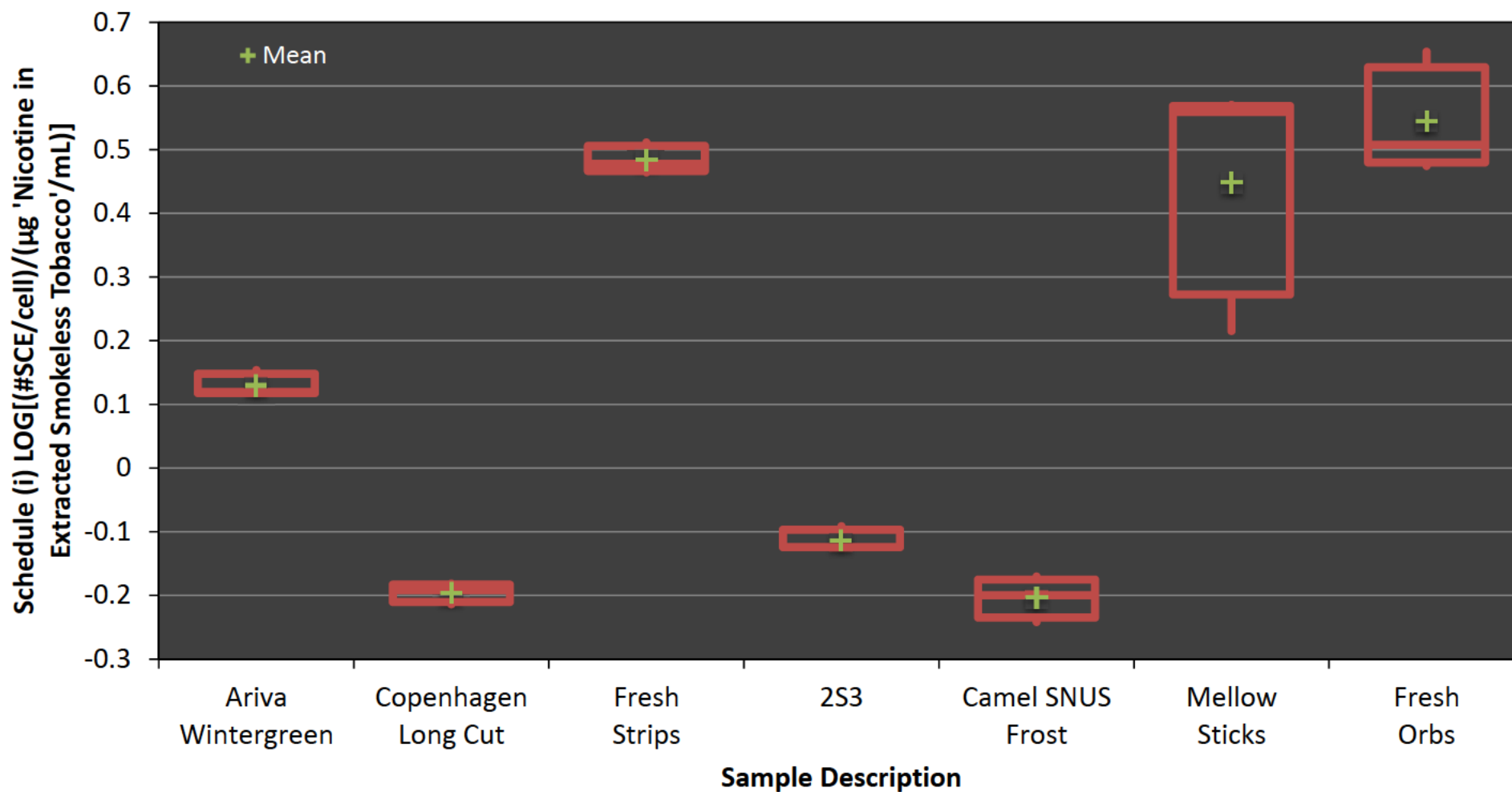
16 April 2010



Test Describe - Comparative

Schedule (i) LOG[(# SCE/cell)/(μg 'Extracted Nicotine in Smokeless Tobacco'/mL)] by Sample Description  
Performed by Wendy Wagstaff

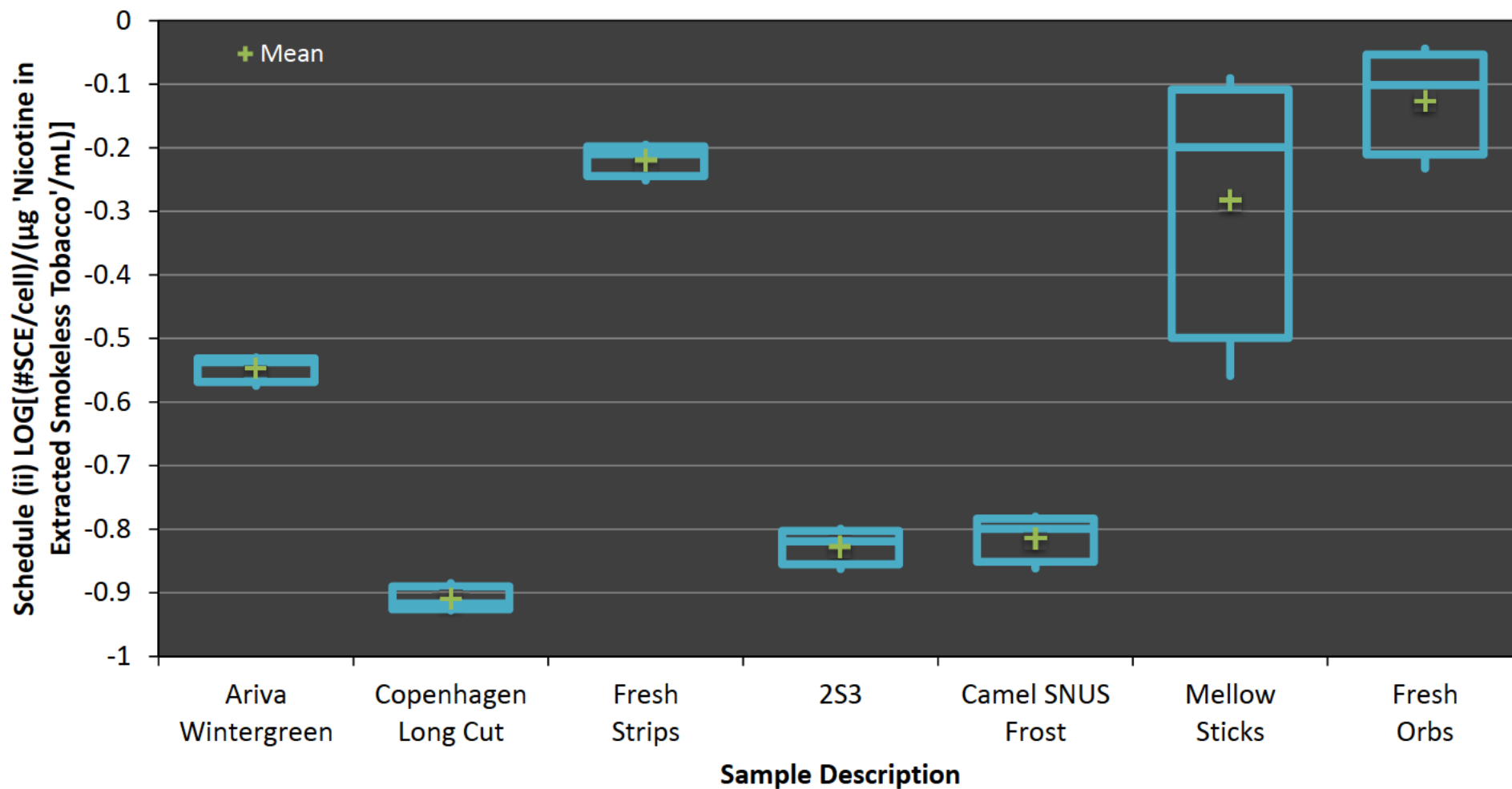
Date 16 April 2010



Test Describe - Comparative

Schedule (ii) LOG[(# SCE/cell)/(μg 'Extracted Nicotine in Smokeless Tobacco'/mL)] by Sample Description  
Performed by Wendy Wagstaff

Date 16 April 2010



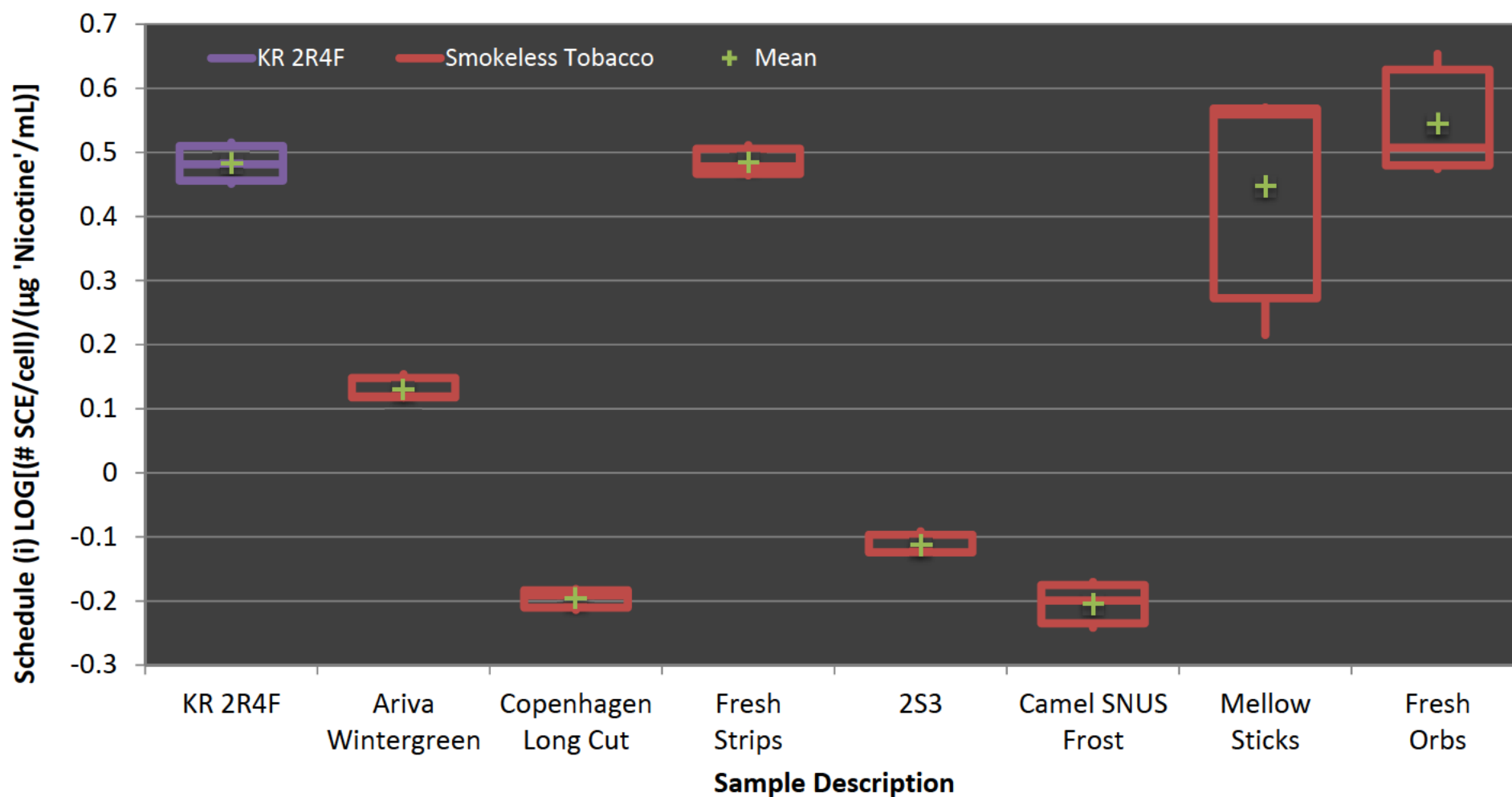
Test Describe - Comparative

Performed by

Schedule (i)  $\text{LOG}[(\# \text{SCE}/\text{cell})/(\mu\text{g 'Nicotine in CSC'}/\text{mL})]$  (KR 2R4F) and  $\text{LOG}[(\# \text{SCE}/\text{cell})/(\mu\text{g 'Extracted Nicotine in DMSO'}/\text{mL})]$  by Sample Description  
Wendy Wagstaff

Date

16 April 2010



Schedule (i) Nicotine (tpm+wt)

Revision: 0

M125\_sce\_Box and Whisker.xls

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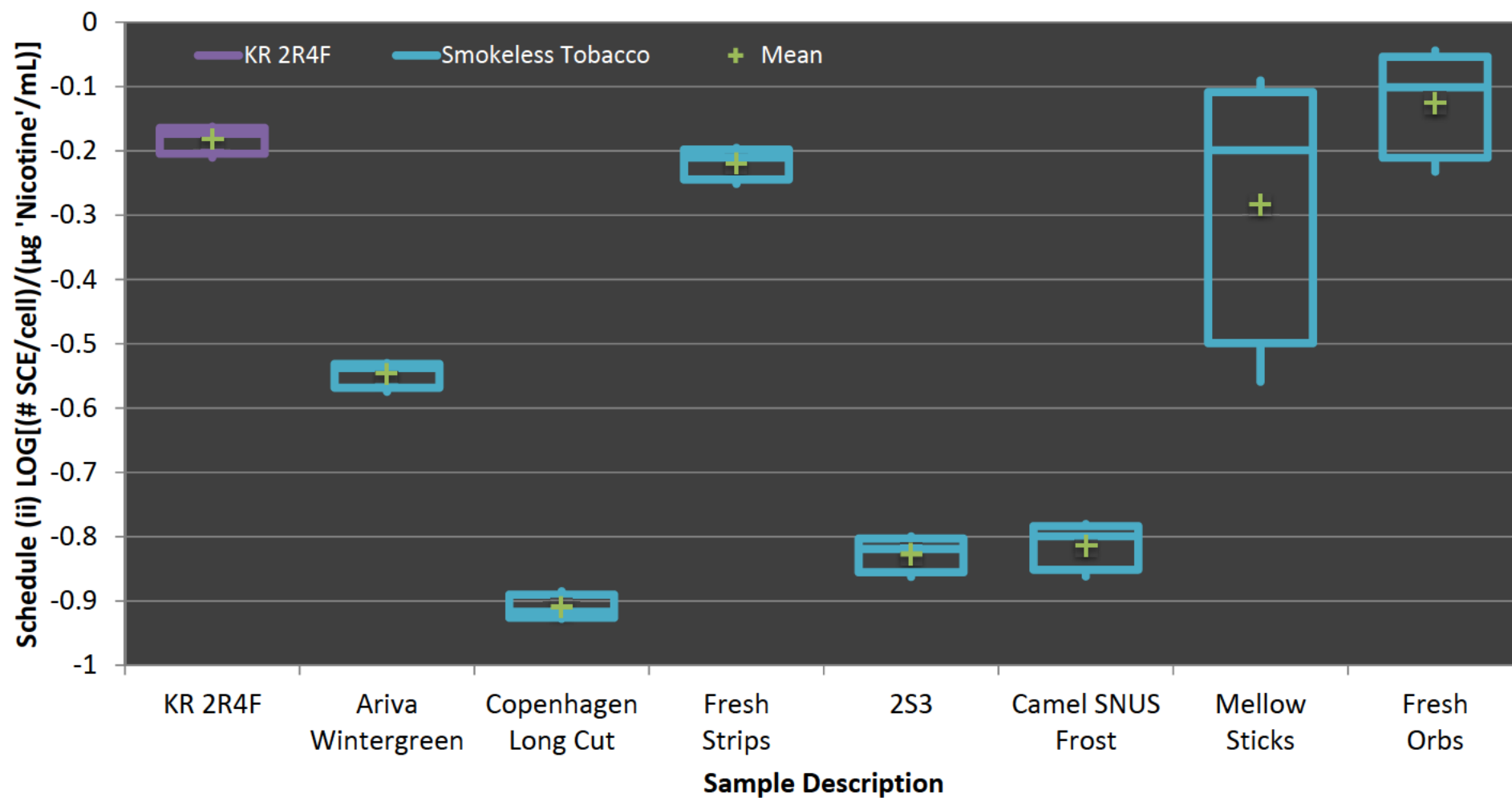
Test Describe - Comparative

Performed by

Schedule (ii)  $\text{LOG}[(\# \text{SCE}/\text{cell})/(\mu\text{g 'Nicotine in CSC'}/\text{mL})]$  (KR 2R4F) and  $\text{LOG}[(\# \text{SCE}/\text{cell})/(\mu\text{g 'Extracted Nicotine in DMSO'}/\text{mL})]$  by Sample Description  
Wendy Wagstaff

Date

16 April 2010



Schedule (ii) Nicotine (tpm+wt)

Revision: 0

M125\_sce\_Box and Whisker.xls

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**Slope Analysis of the Linear Portion of the Dose-Response Curve**  
**[Number of Sister Chromatid Exchanges per Cell / (µg 'Nicotine'/mL)]**

			(Number of Sister Chromatid Exchanges/Cell) / (µg 'Nicotine'/mL)													
Treatment Schedule	Sample ID	Sample Description	Replicate 1			Replicate 2			Replicate 3			Statistics for Replicate			T-test Analysis	
			Dose Range	slope	LOG	Dose Range	slope	LOG	Dose Range	slope	LOG	LOG[Slope] Estimates			(H <sub>0</sub> : mean[Slope] = 0)	
			(µg 'NIC'/mL)		[slope]	(µg 'NIC'/mL)		[slope]	(µg 'NIC'/mL)		[slope]	Mean	Std. Err.	95% C.I.	p-value	significance
Schedule (i)	1002241	Ariva Wintergreen	0 - 5.14	1.31	0.117	0 - 5.21	1.32	0.119	0 - 5.121	1.42	0.154	0.130	0.012	0.079 to 0.181	0.001	significant
Schedule (i)	1002242	Copenhagen Long Cut	0 - 11.1	0.643	-0.192	0 - 10.7	0.611	-0.214	0 - 10.8	0.658	-0.181	-0.196	0.010	-0.237 to -0.154	0.000	significant
Schedule (i)	1002243	Fresh Strips	0 - 2.14	2.91	0.464	0 - 2.13	3.25	0.511	0 - 2.11	3.01	0.478	0.485	0.014	0.424 to 0.545	0.001	significant
Schedule (i)	1002244	2S3	0 - 10.6	0.810	-0.091	0 - 10.9	0.751	-0.124	0 - 11.3	0.751	-0.124	-0.113	0.011	-0.16 to -0.066	0.001	significant
Schedule (i)	1002245	Camel SNUS Frost	0 - 9.19	0.573	-0.242	0 - 8.54	0.632	-0.200	0 - 8.68	0.675	-0.170	-0.204	0.021	-0.293 to -0.115	0.002	significant
Schedule (i)	1002246	Mellow Sticks	0 - 2.19	3.62	0.559	0 - 2	3.72	0.570	0 - 4.58	1.64	0.215	0.448	0.117	-0.053 to 0.95	0.048	significant
Schedule (i)	1002247	Fresh Orbs	0 - 2.12	3.22	0.507	0 - 2.47	2.98	0.474	0 - 1.68	4.51	0.654	0.545	0.055	0.308 to 0.782	0.017	significant
Schedule (i)	1002248	KR 2R4F	0 - 4.91	3.28	0.515	0 - 5.37	2.83	0.451	0 - 5.06	3.03	0.481	0.483	0.019	0.403 to 0.563	0.002	significant
Schedule (ii)	1002241	Ariva Wintergreen	6.85 - 20.6	0.266	-0.575	6.94 - 20.8	0.290	-0.537	6.83 - 20.5	0.295	-0.530	-0.547	0.014	-0.607 to -0.488	0.001	significant
Schedule (ii)	1002242	Copenhagen Long Cut	14.9 - 44.6	0.130	-0.885	14.3 - 42.8	0.121	-0.917	14.4 - 43.1	0.118	-0.928	-0.910	0.013	-0.965 to -0.854	0.001	significant
Schedule (ii)	1002243	Fresh Strips	2.85 - 8.55	0.561	-0.251	2.83 - 8.5	0.616	-0.210	2.82 - 8.45	0.638	-0.195	-0.219	0.017	-0.291 to -0.147	0.001	significant
Schedule (ii)	1002244	2S3	14.2 - 42.5	0.137	-0.863	14.5 - 43.6	0.152	-0.819	15 - 45	0.159	-0.800	-0.827	0.019	-0.907 to -0.747	0.002	significant
Schedule (ii)	1002245	Camel SNUS Frost	12.3 - 36.8	0.137	-0.862	11.4 - 34.2	0.166	-0.780	11.6 - 34.7	0.159	-0.799	-0.814	0.025	-0.92 to -0.708	0.003	significant
Schedule (ii)	1002246	Mellow Sticks	2.92 - 8.76	0.632	-0.199	2.67 - 8.01	0.812	-0.091	6.1 - 18.3	0.276	-0.559	-0.283	0.142	-0.892 to 0.326	0.068	not significant
Schedule (ii)	1002247	Fresh Orbs	2.82 - 8.46	0.792	-0.101	3.29 - 9.87	0.586	-0.232	2.23 - 6.7	0.904	-0.044	-0.126	0.056	-0.366 to 0.114	0.015	significant
Schedule (ii)	1002248	KR 2R4F	6.54 - 19.6	0.670	-0.174	7.16 - 21.5	0.616	-0.211	6.75 - 20.2	0.688	-0.162	-0.182	0.015	-0.245 to -0.12	0.001	significant

KR 2R4F sample dose basis: µg 'Nicotine in Total Particulate Matter'/mL.

Dose basis for all other samples: µg 'Extracted Nicotine in Smokeless Tobacco'/mL.

### One-Way ANOVA of Mean 'Nicotine' LOG[Slope] Estimates Among Test Samples

Schedule (i)

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
Among Samples	2.2928	7	0.3275	48.67	<b>0.000</b>
Within Samples	0.1077	16	0.0067		
Total (Corr.)	2.4005	23			

Schedule (ii)

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
Among Samples	2.2249	7	0.3178	33.96	<b>0.000</b>
Within Samples	0.1497	16	0.0094		
Total (Corr.)	2.3747	23			

One-way ANOVA analysis indicates significant differences (at  $\alpha = 0.05$ ) among mean 'Nicotine' log-transformed specific activity slope estimates for test samples under both Treatment Schedules (i) and (ii).

### Ratio (Max ÷ Min) of Standard Deviations of log-transformed 'Nicotine' Slope Estimates and Corresponding Method of Comparison

Treatment Schedule	Std. Dev. Ratio (Max ÷ Min)	Method of Comparison
Schedule (i)	12.1	ANOVA (equal variance)
Schedule (ii)	11.0	ANOVA (equal variance)

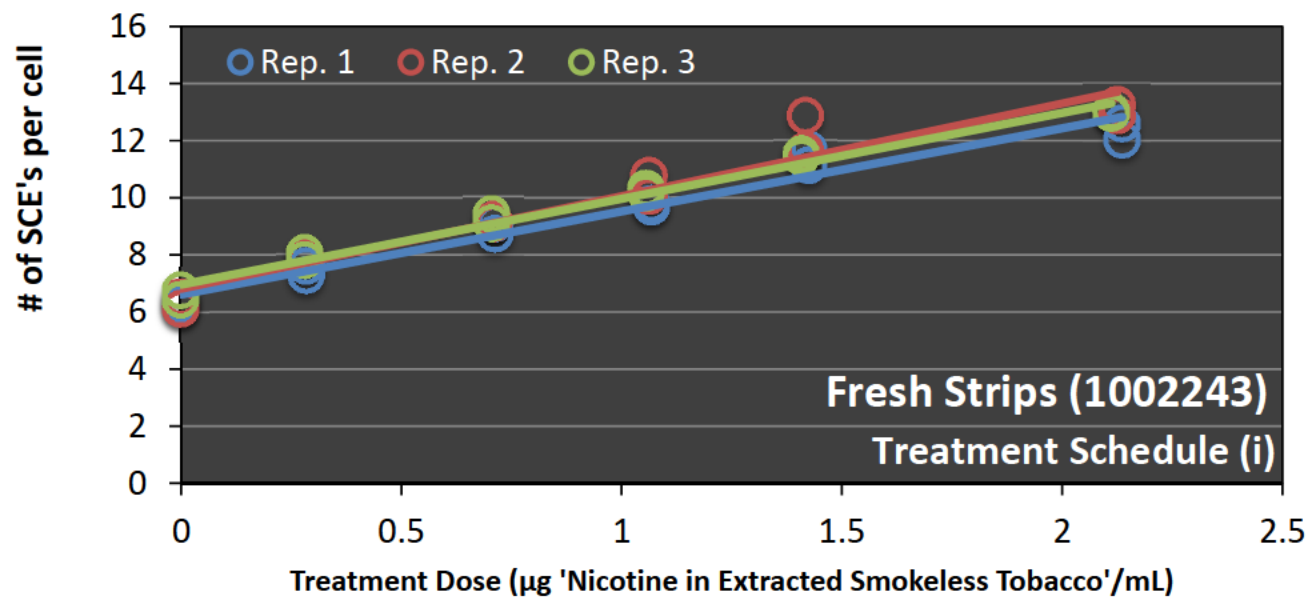
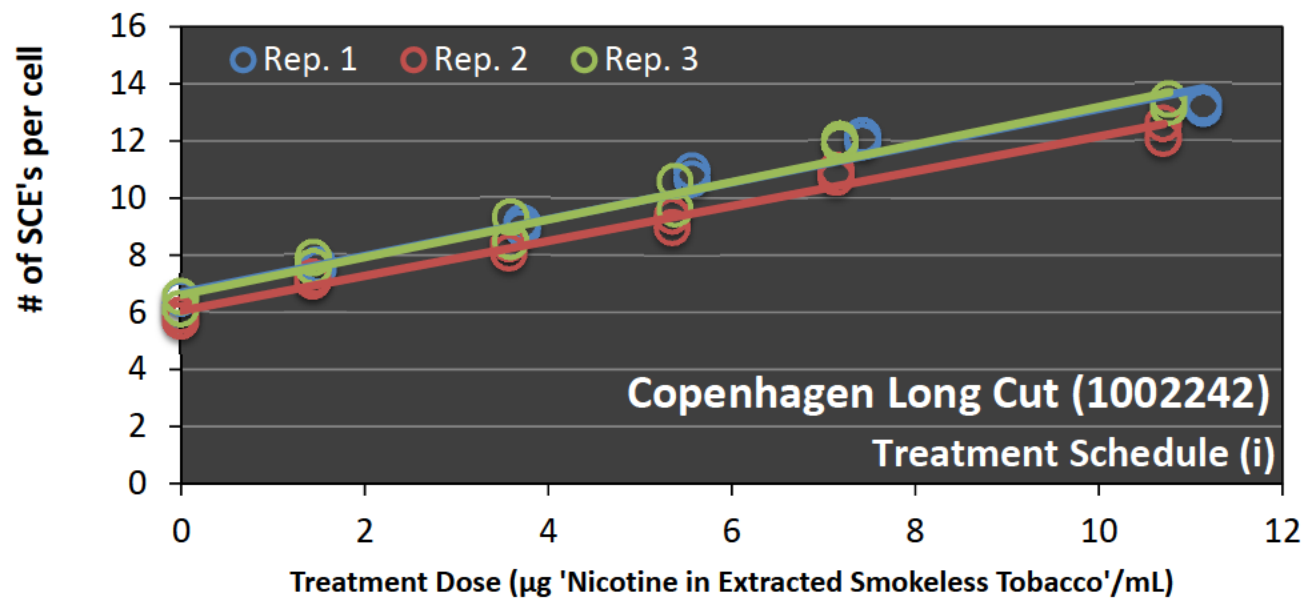
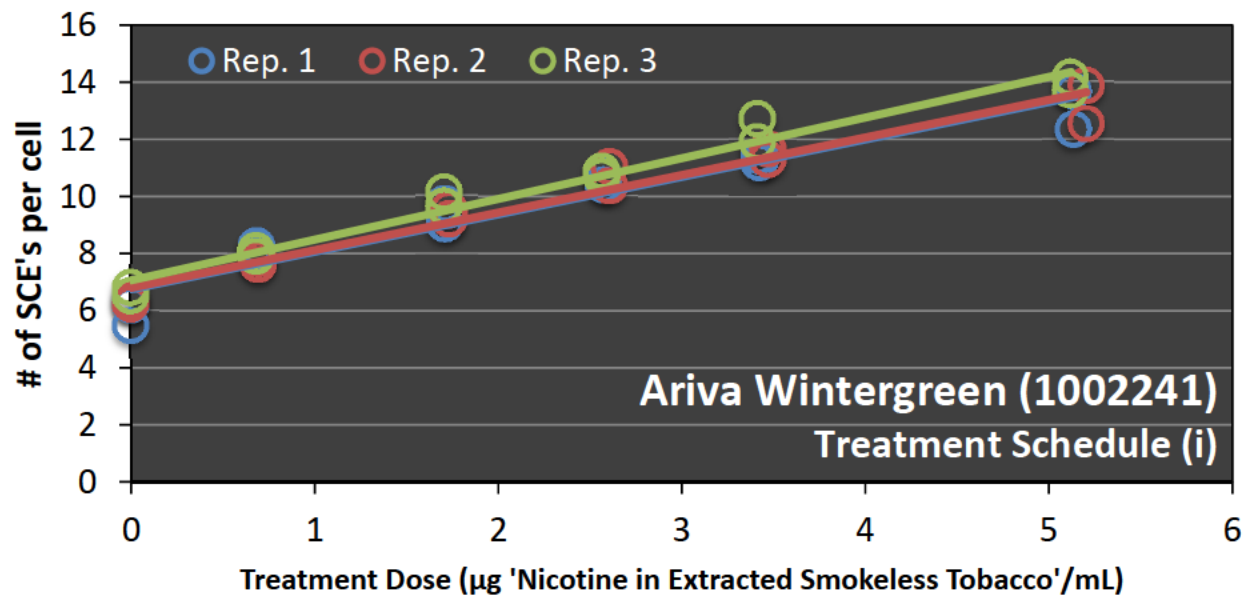
### ANOVA-Based Comparisons of Average 'Nicotine' LOG[Slope] for Contrasts of Interest using Bonferroni-adjusted p-values

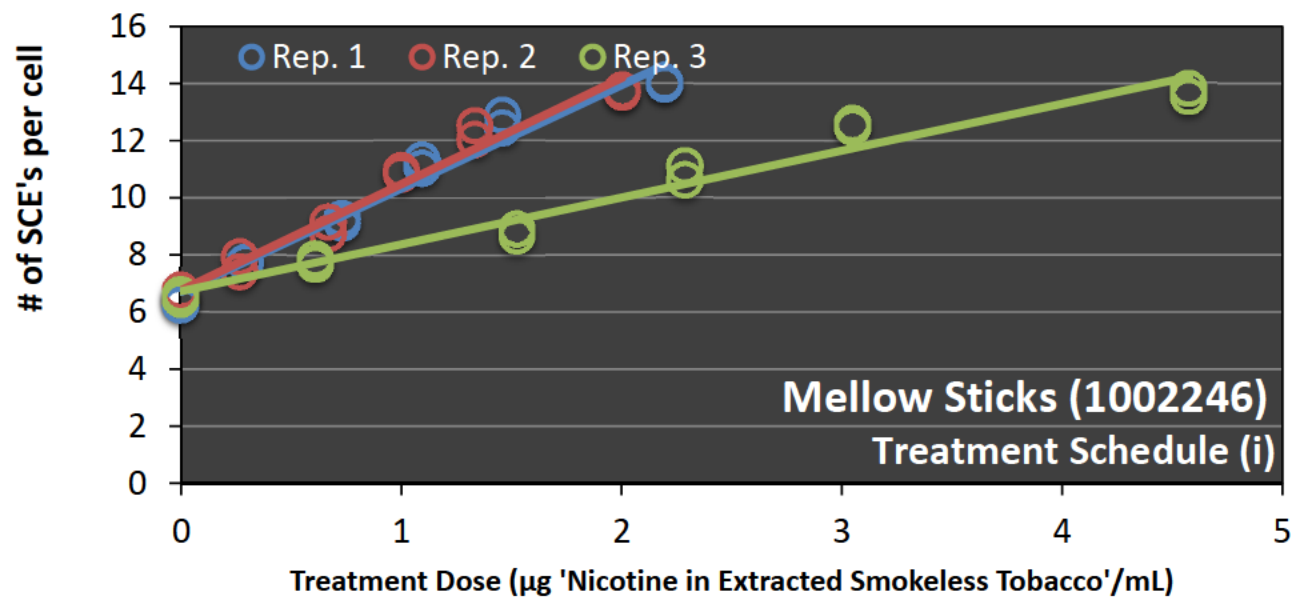
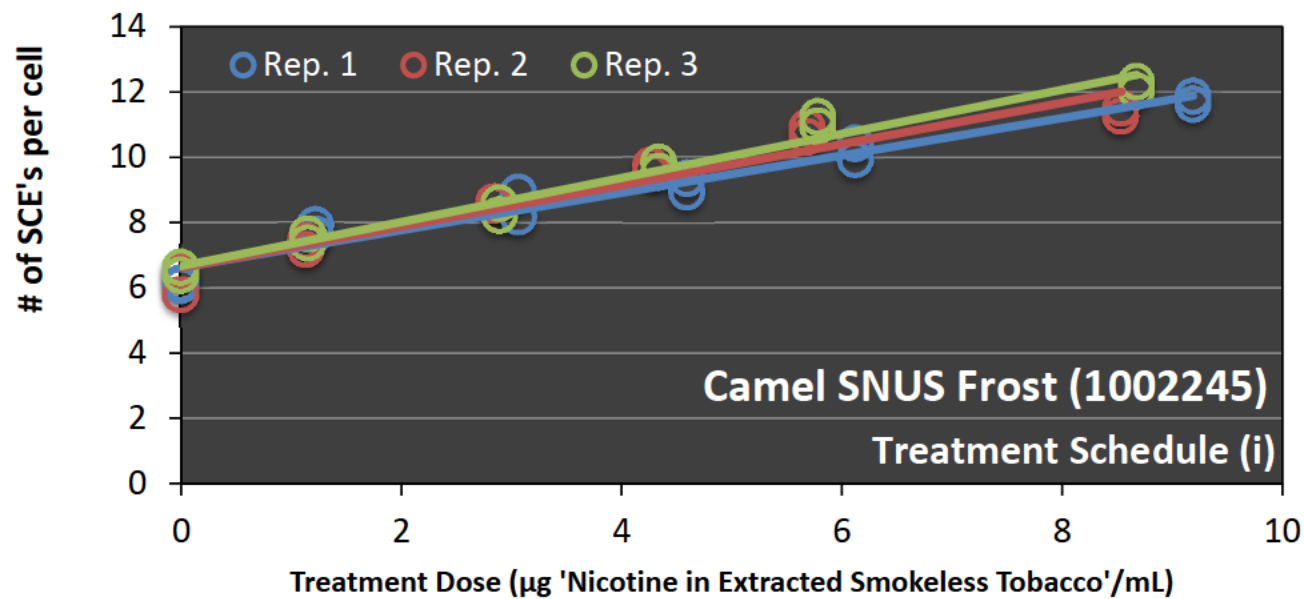
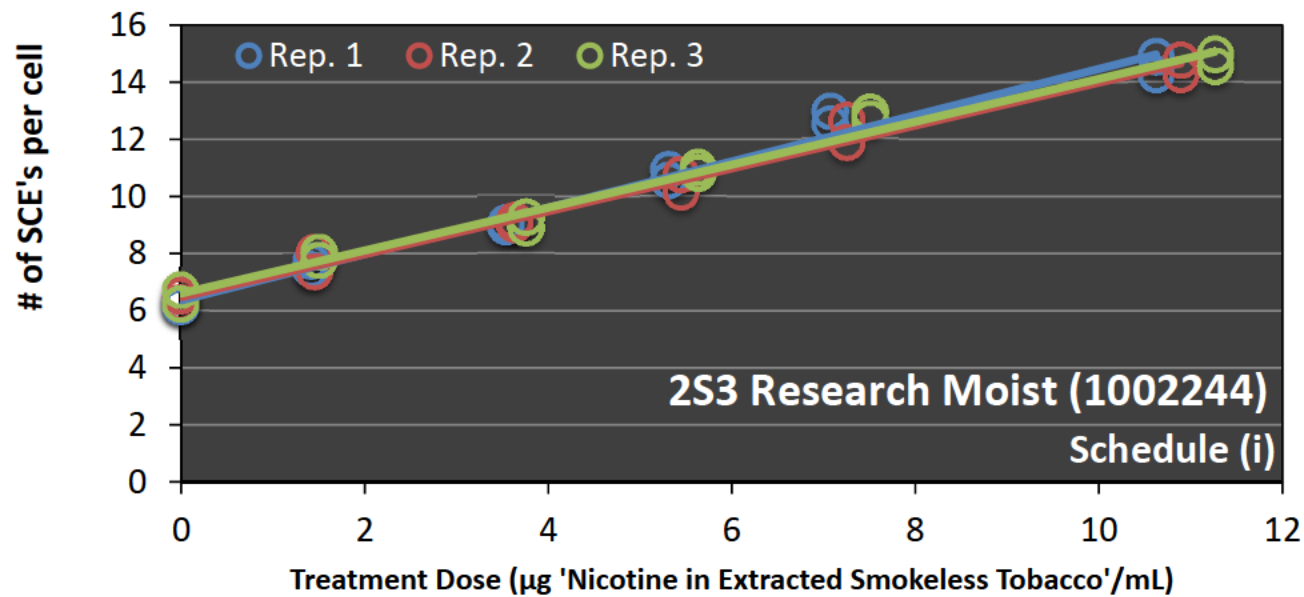
ANOVA-Based Comparison	Schedule (i)			Schedule (ii)		
	f-ratio	p-value	significance at $\alpha = 0.05$	f-ratio	p-value	significance at $\alpha = 0.05$
Ariva Wintergreen vs. KR 2R4F	27.70	0.0001	<b>significant</b>	21.37	0.0003	<b>significant</b>
Copenhagen Long Cut vs. KR 2R4F	102.58	0.0000	<b>significant</b>	84.88	0.0000	<b>significant</b>
Fresh Strips vs. KR 2R4F	0.00	0.9786	not significant	0.22	0.6469	not significant
2S3 vs. KR 2R4F	79.15	0.0000	<b>significant</b>	66.66	0.0000	<b>significant</b>
Camel SNUS Frost vs. KR 2R4F	105.07	0.0000	<b>significant</b>	63.94	0.0000	<b>significant</b>
Mellow Sticks vs. KR 2R4F	0.26	0.6142	not significant	1.62	0.2208	not significant
Fresh Orbs vs. KR 2R4F	0.87	0.3649	not significant	0.51	0.4864	not significant

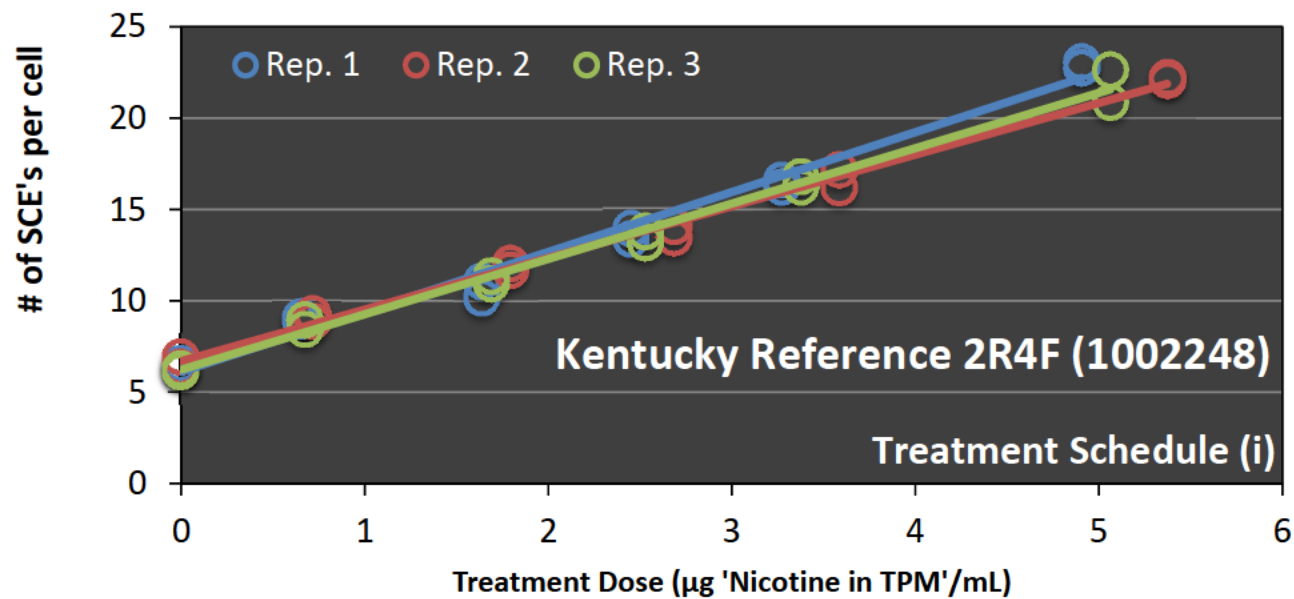
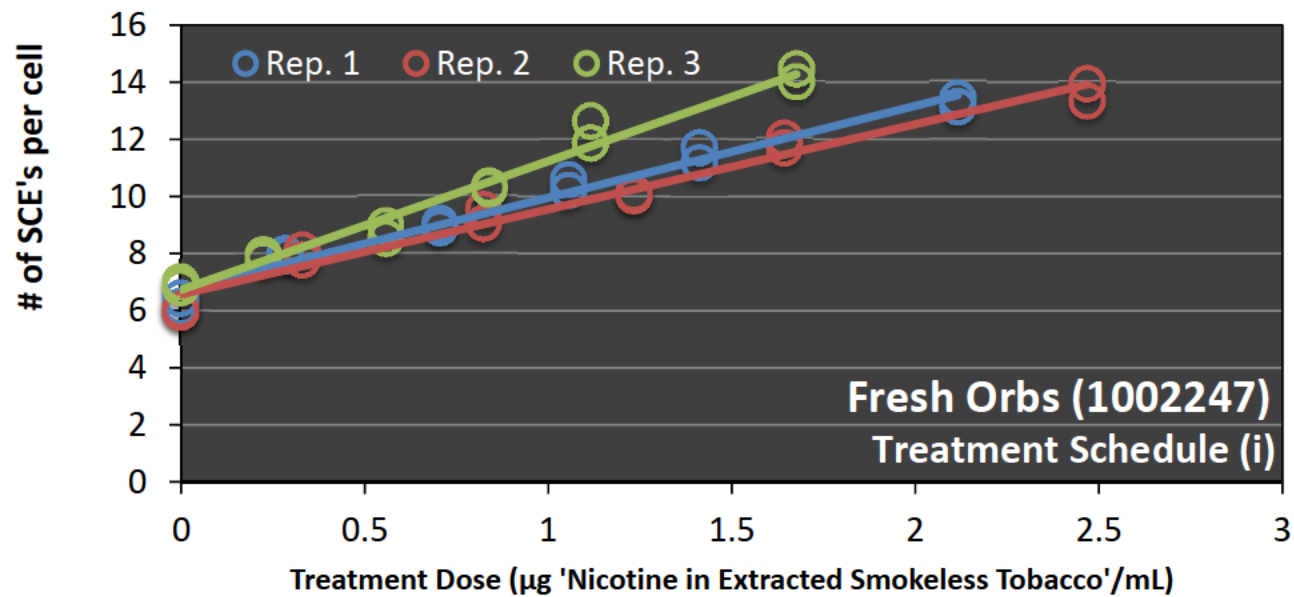
ANOVA-based comparison p-values less than the Bonferroni-adjusted  $\alpha = 0.05$  indicate that significant differences were detected between the mean 'nicotine in TPM' log-transformed slope of the KR 2R4F (1002284) smoked tobacco samples and the mean 'nicotine in extracted smokeless tobacco' log-transformed slope of the following smokeless tobacco samples under both Treatment Schedules (i) and (ii):

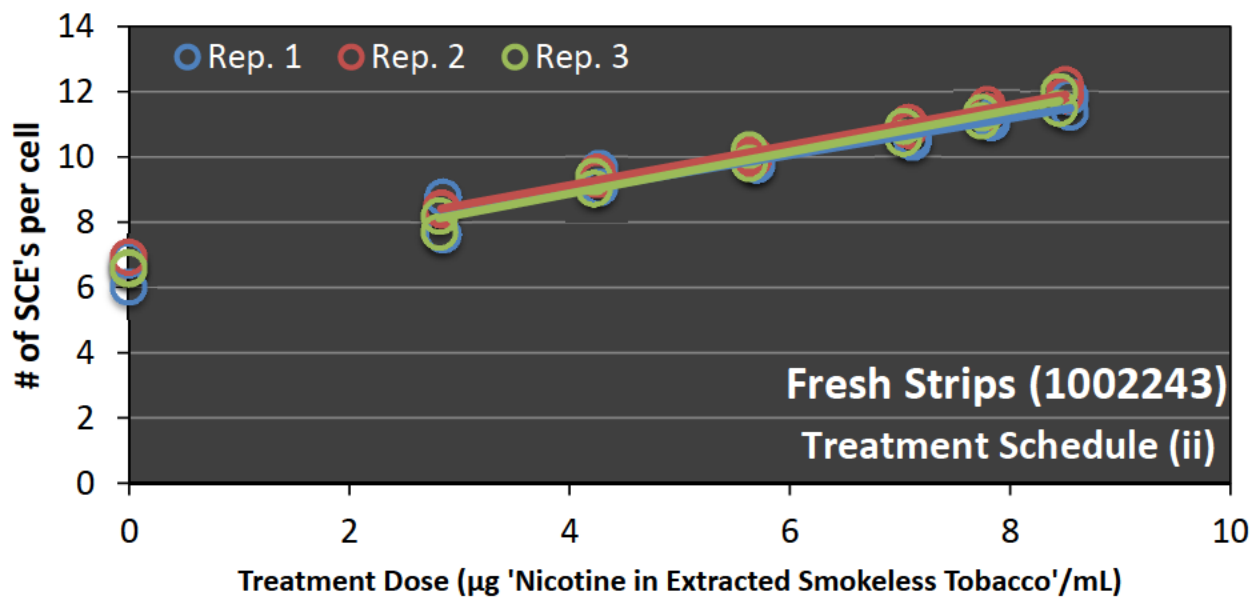
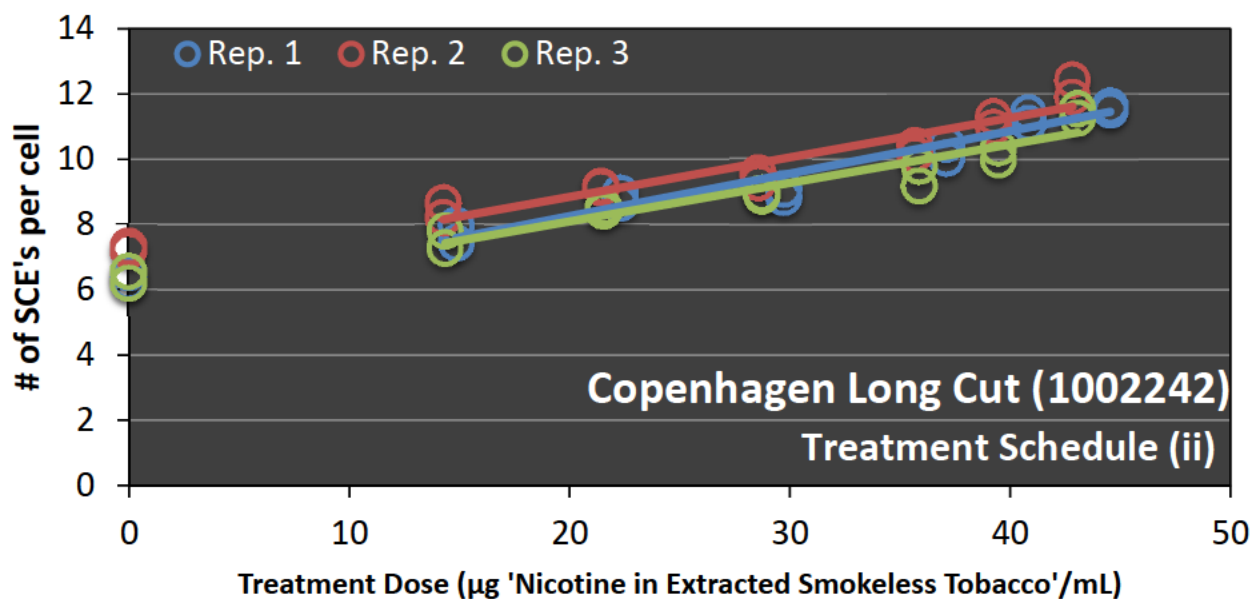
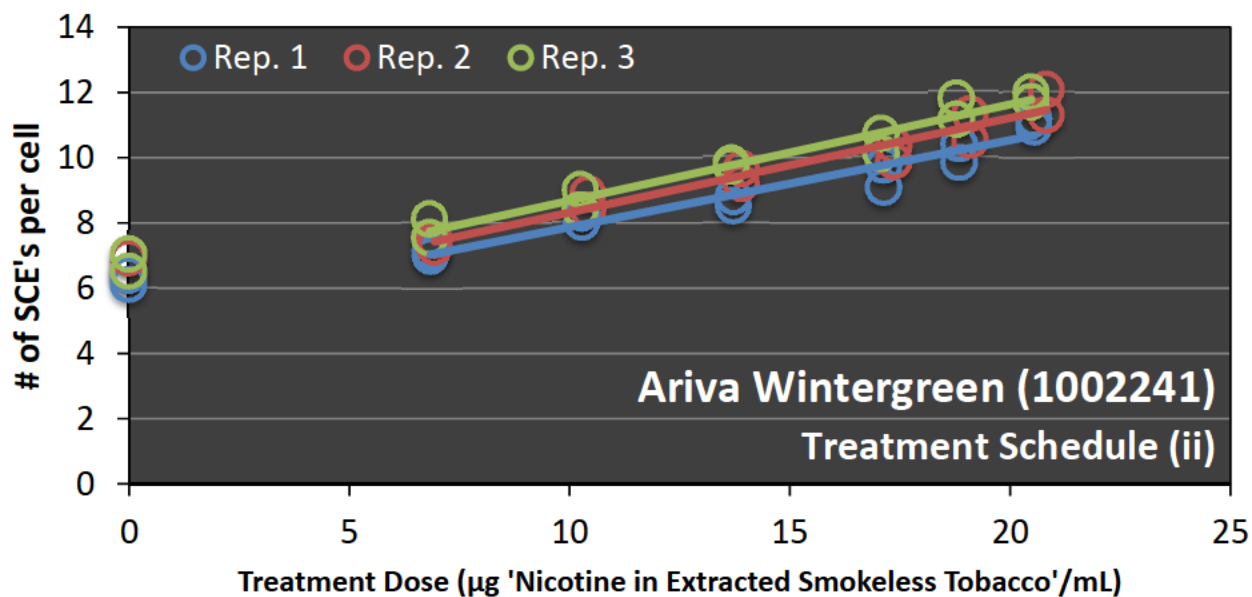
#### Treatment Schedules (i) and (ii)

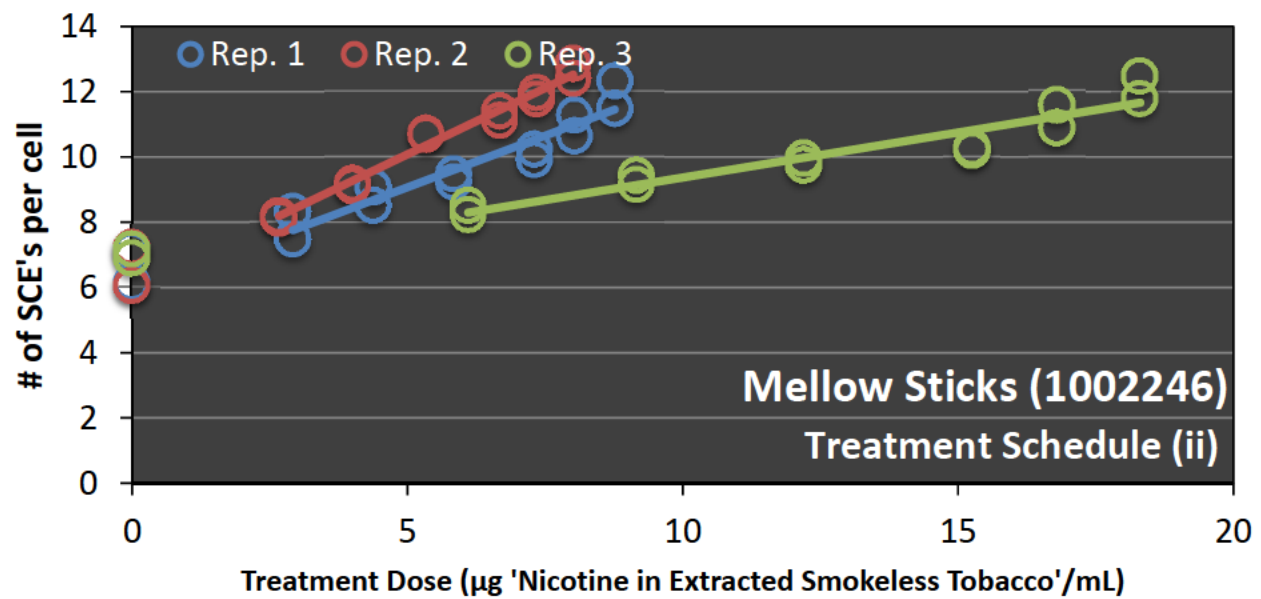
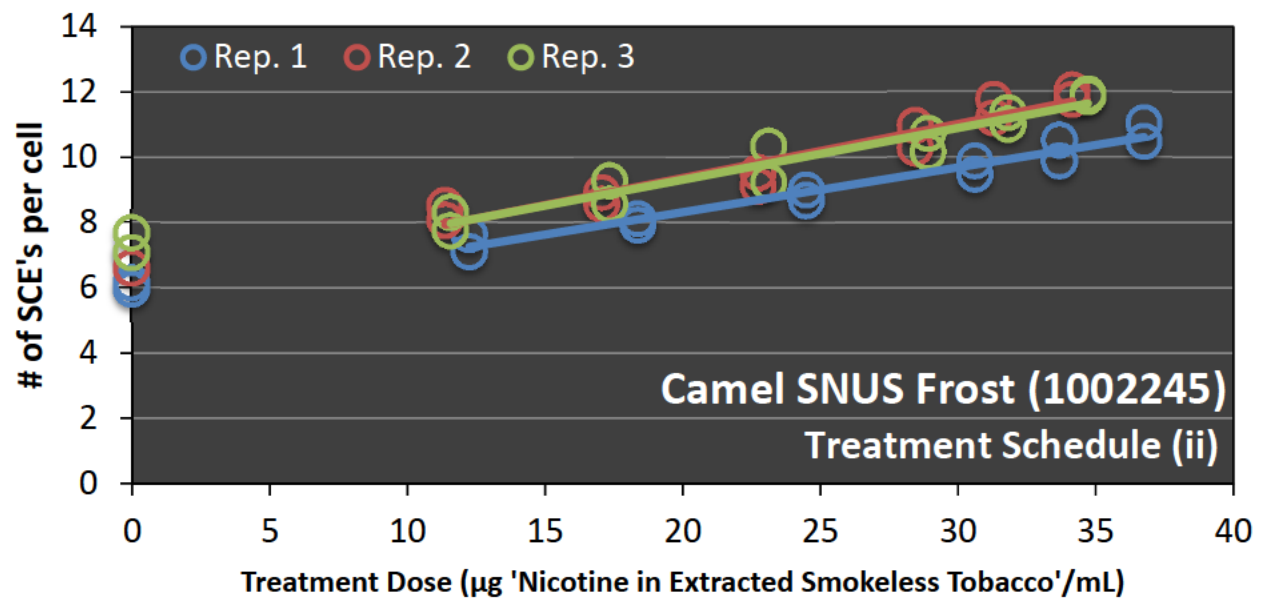
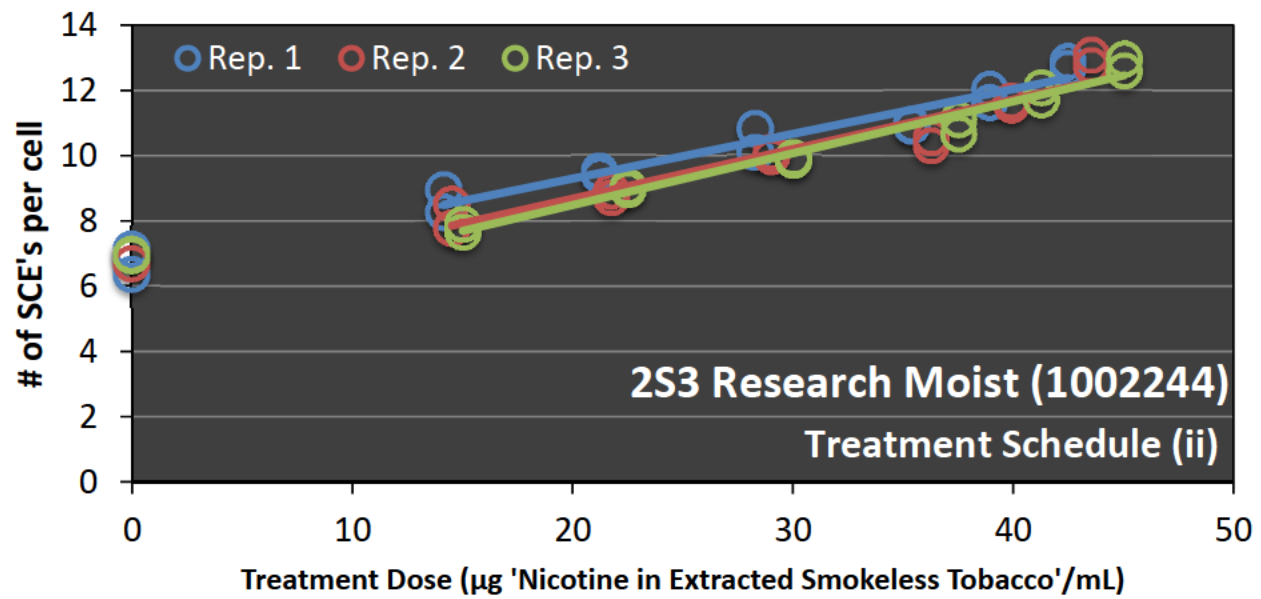
{Ariva Wintergreen (1002241), Copenhagen Long Cut (1002242), 2S3 (1002244), Camel SNUS Frost (1002245)}

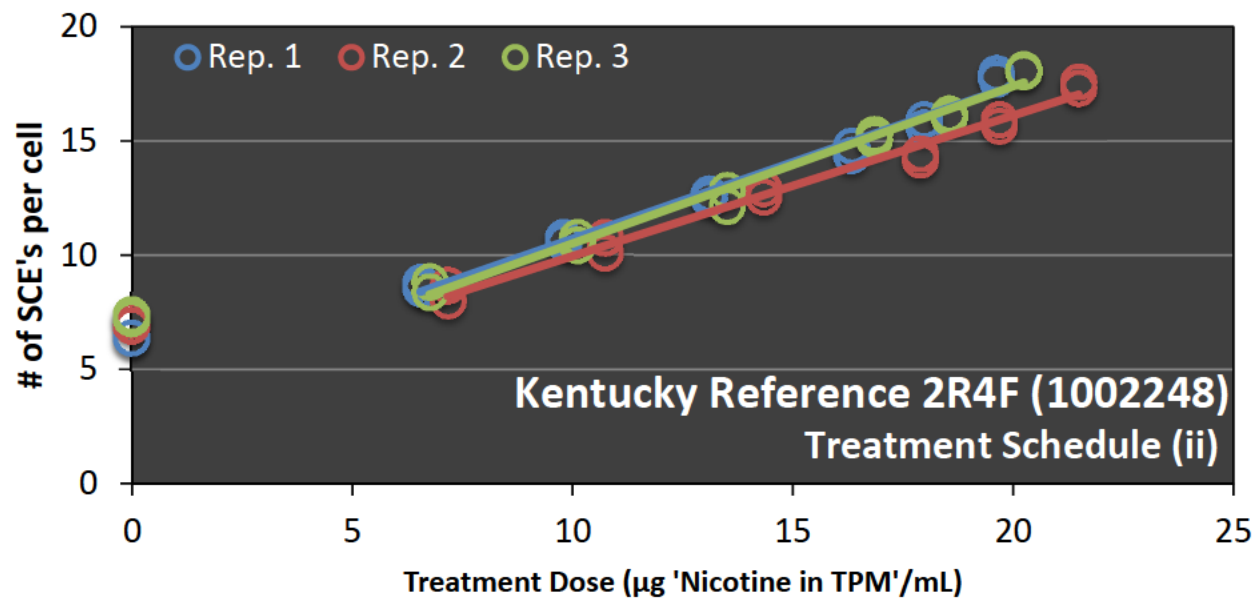
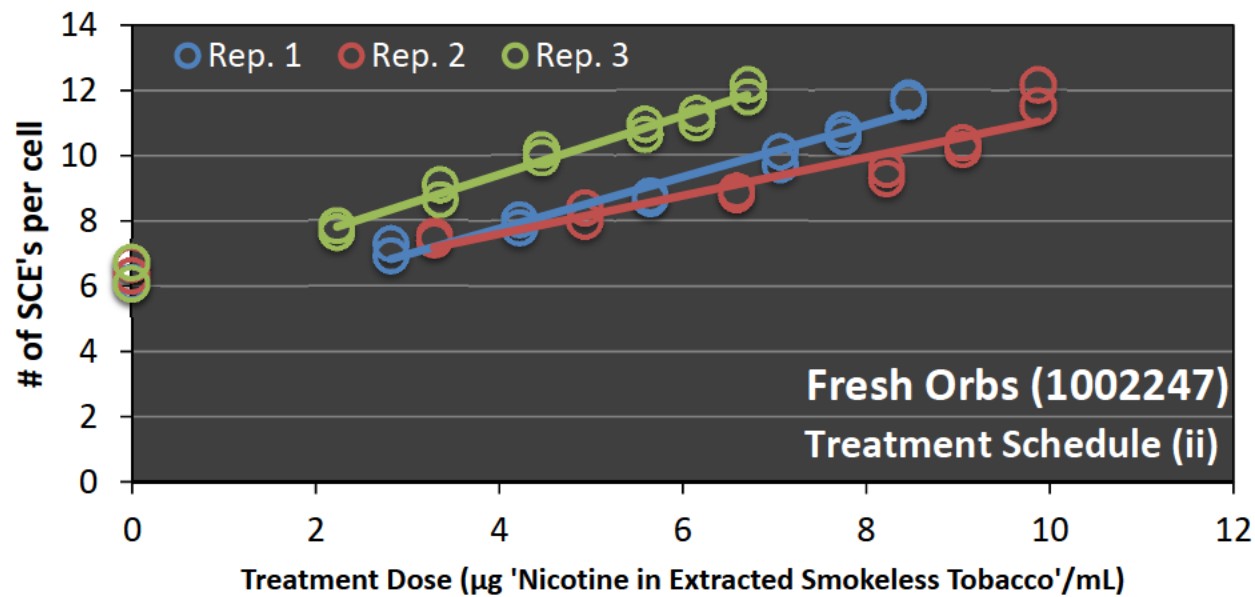


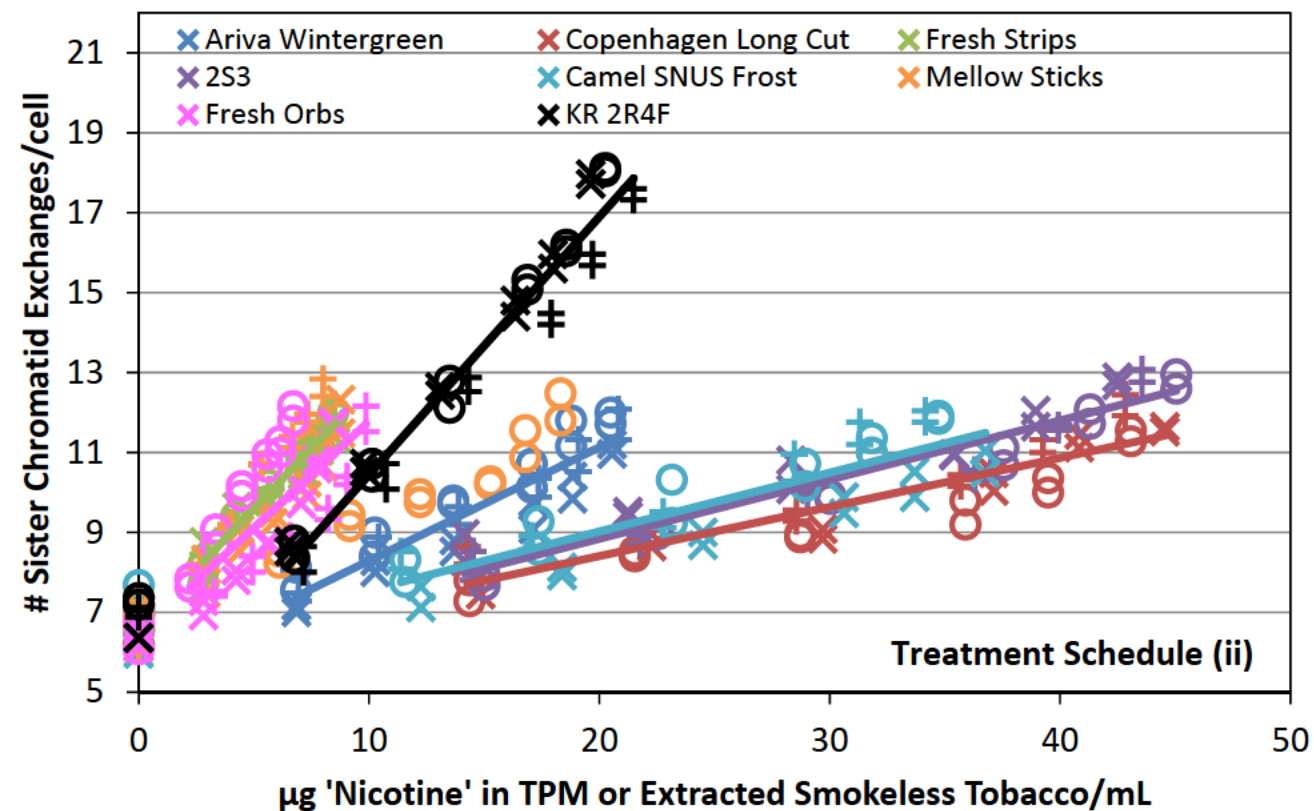
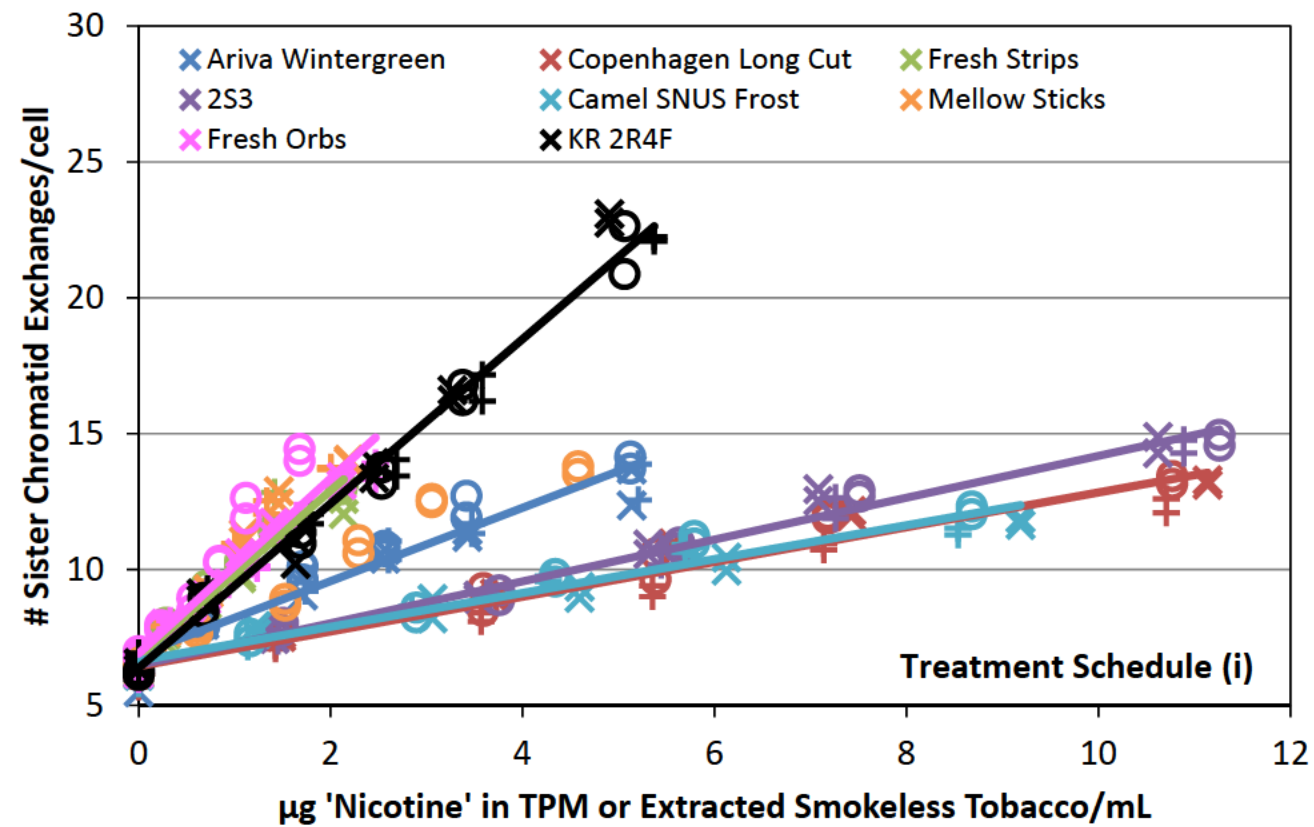








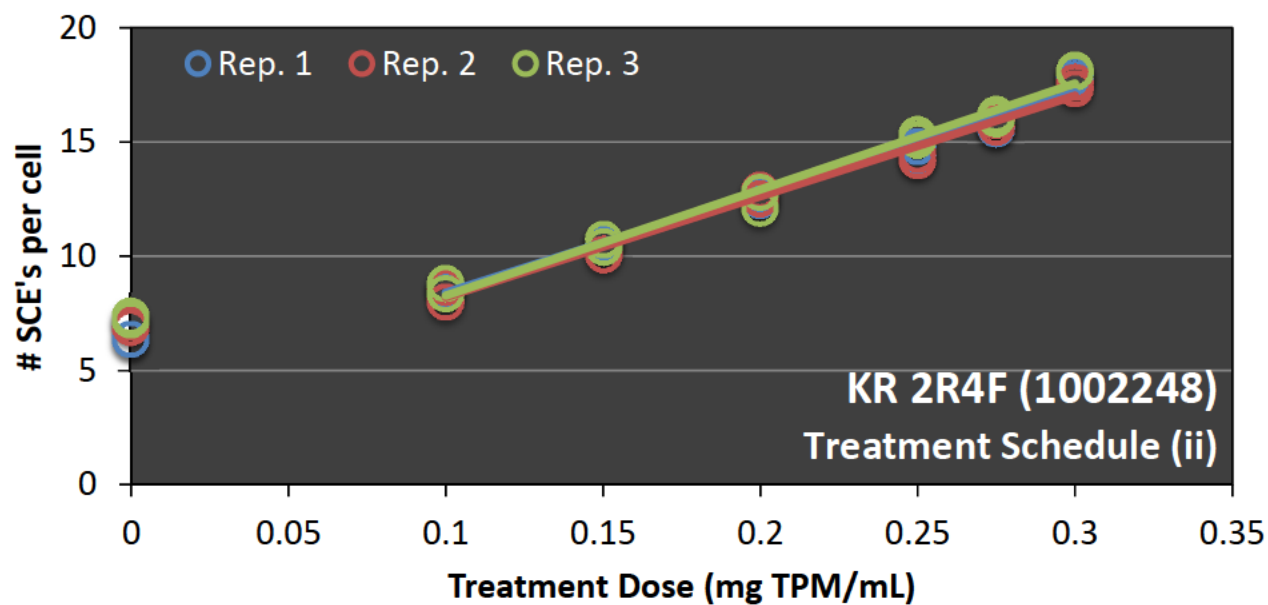
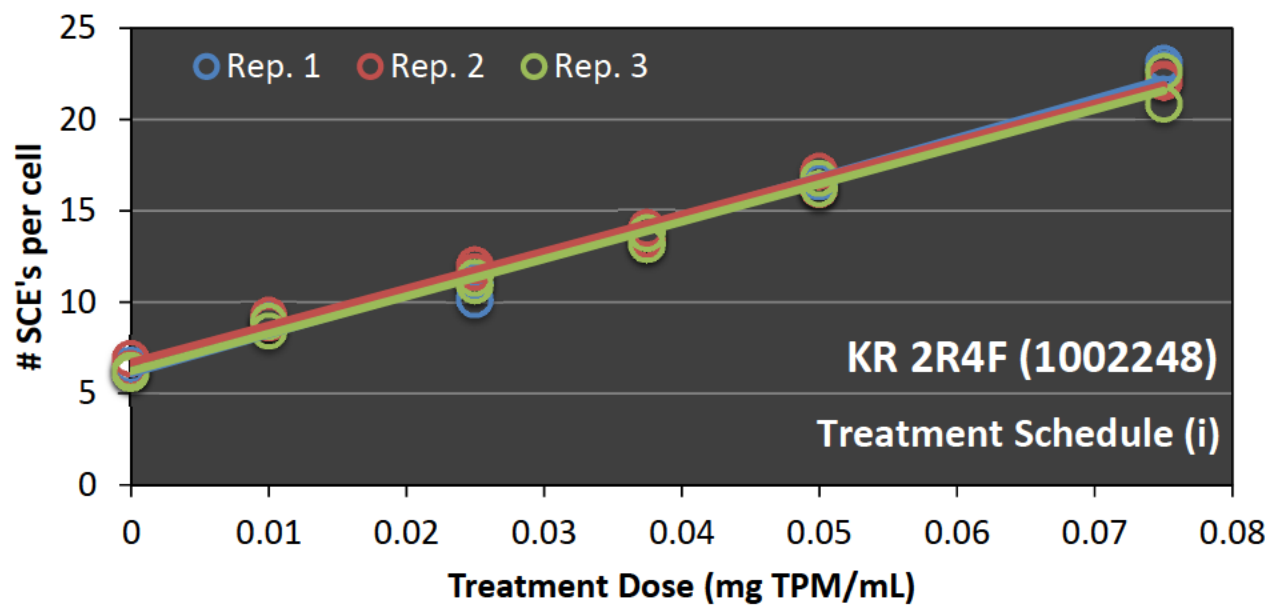






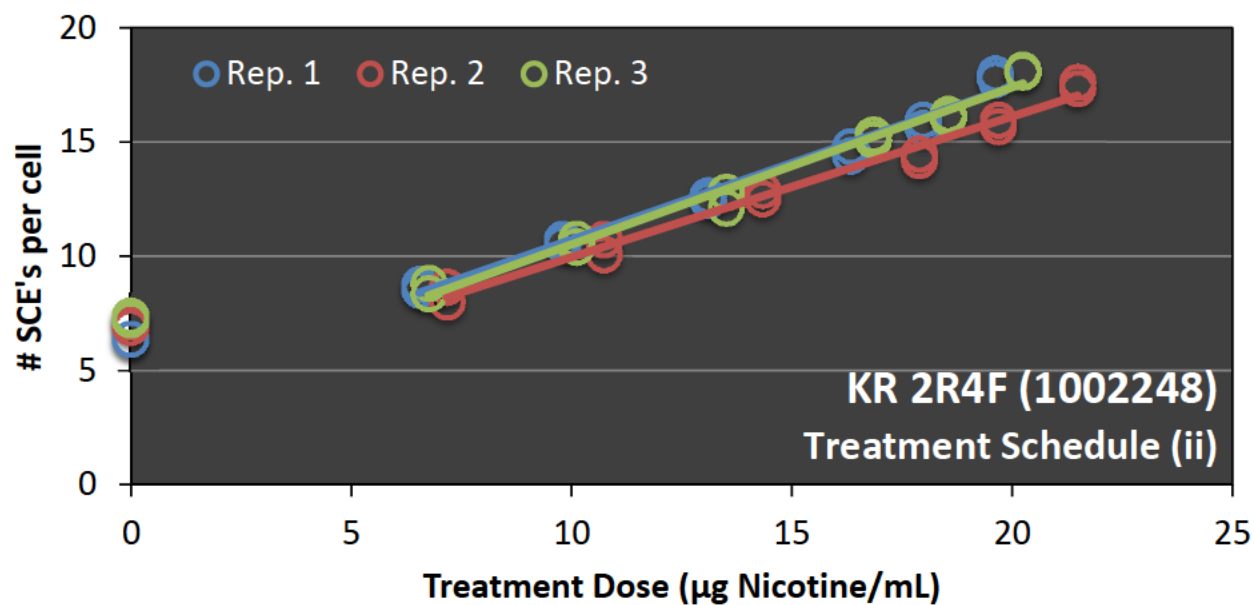
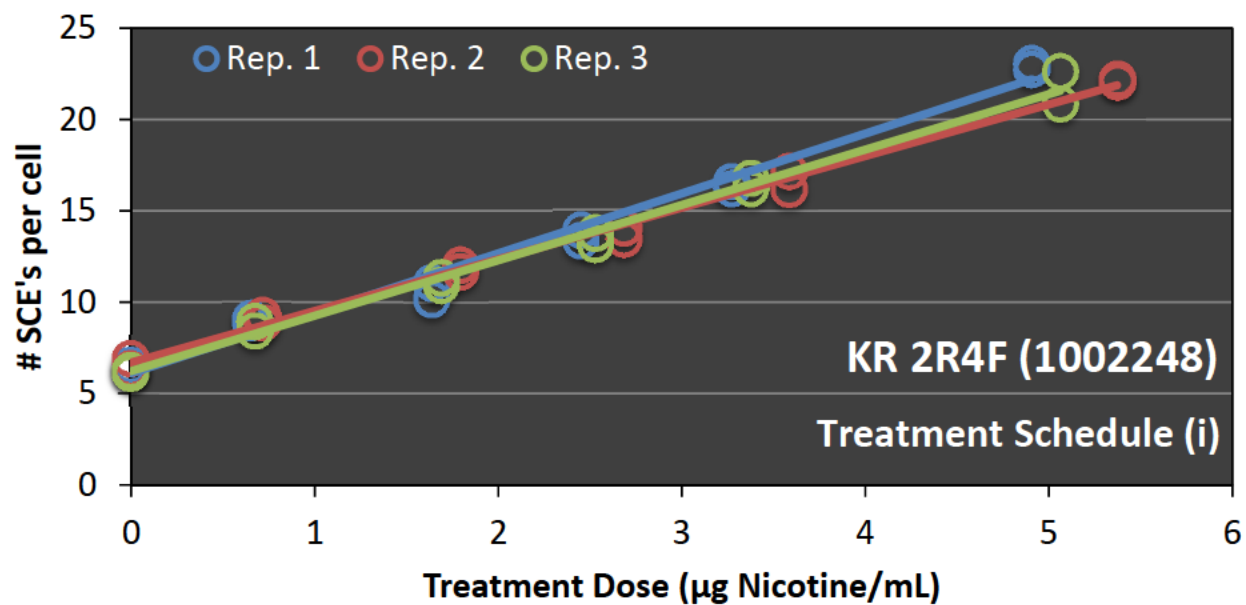
**Slope Analysis of the Linear Portion of the Dose-Response Curve**  
**[Number of Sister Chromatid Exchanges per Cell / (mg TPM/mL)]**

			(Number of SCE's/Cell) / (mg TPM/mL)													
Treatment Schedule	Sample ID	Sample Description	Replicate 1			Replicate 2			Replicate 3			Statistics for Replicate			T-test Analysis	
			Dose Range	slope	LOG	Dose Range	slope	LOG	Dose Range	slope	LOG	LOG[Slope] Estimates			(H <sub>0</sub> : mean[Slope] = 0)	
			(mg TPM/mL)		[slope]	(mg TPM/mL)		[slope]	(mg TPM/mL)		[slope]	Mean	Std. Err.	95% C.I.	p-value	significance
Schedule (i)	1002248	KR 2R4F	0 - 0.075	214	2.33	0 - 0.075	202	2.31	0 - 0.075	204	2.31	2.32	0.01	2.28 to 2.35	0.000	significant
Schedule (ii)	1002248	KR 2R4F	0.1 - 0.3	43.9	1.64	0.1 - 0.3	44.1	1.64	0.1 - 0.3	46.4	1.67	1.65	0.01	1.62 to 1.69	0.000	significant



**Slope Analysis of the Linear Portion of the Dose-Response Curve**  
**[Number of Sister Chromatid Exchanges per Cell / ( $\mu\text{g}$  Nicotine/mL)]**

			(Number of SCE's/Cell) / (µg Nicotine/mL)													
Treatment Schedule	Sample ID	Sample Description	Replicate 1			Replicate 2			Replicate 3			Statistics for Replicate			T-test Analysis	
			Dose Range	slope	LOG	Dose Range	slope	LOG	Dose Range	slope	LOG	LOG[Slope] Estimates			(H <sub>0</sub> : mean[Slope] = 0)	
			(µg 'NIC'/mL)		[slope]	(µg 'NIC'/mL)		[slope]	(µg 'NIC'/mL)		[slope]	Mean	Std. Err.	95% C.I.	p-value	significance
Schedule (i)	1002248	KR 2R4F	0 - 4.91	3.28	0.515	0 - 5.37	2.83	0.451	0 - 5.06	3.03	0.481	0.483	0.019	0.403 to 0.563	0.002	significant
Schedule (ii)	1002248	KR 2R4F	6.54 - 19.6	0.670	-0.174	7.16 - 21.5	0.616	-0.211	6.75 - 20.2	0.688	-0.162	-0.182	0.015	-0.245 to -0.12	0.001	significant



**Slope Analysis of the Linear Portion of the Dose-Response Curve**  
**[Number of Sister Chromatid Exchanges per Cell / (mg 'Extracted Smokeless Tobacco in DMSO'/mL)]**

			(Number of SCE's/Cell) / (mg 'extracted smokeless tobacco'/mL)													
Treatment Schedule	Sample ID	Sample Description	Replicate 1			Replicate 2			Replicate 3			Statistics for Replicate			T-test Analysis	
			Dose Range	slope	LOG	Dose Range	slope	LOG	Dose Range	slope	LOG	LOG[Slope] Estimates			(H <sub>0</sub> : mean[Slope] = 0)	
			(mg 'ST'/mL)		[slope]	(mg 'ST'/mL)		[slope]	(mg 'ST'/mL)		[slope]	Mean	Std. Err.	95% C.I.	p-value	significance
Schedule (i)	1002241	Ariva Wintergreen	0 - 0.833	8.08	0.907	0 - 0.834	8.21	0.915	0 - 0.834	8.75	0.942	0.921	0.011	0.876 - 0.967	0.001	significant
Schedule (i)	1002242	Copenhagen Long Cut	0 - 0.833	8.60	0.934	0 - 0.834	7.85	0.895	0 - 0.834	8.51	0.930	0.920	0.012	0.866 - 0.973	0.001	significant
Schedule (i)	1002243	Fresh Strips	0 - 0.833	7.47	0.873	0 - 0.833	8.28	0.918	0 - 0.834	7.62	0.882	0.891	0.014	0.832 - 0.95	0.001	significant
Schedule (i)	1002244	2S3	0 - 0.834	10.3	1.01	0 - 0.834	9.81	0.992	0 - 0.834	10.1	1.01	1.004	0.006	0.976 - 1.032	0.000	significant
Schedule (i)	1002245	Camel SNUS Frost	0 - 0.834	6.31	0.800	0 - 0.833	6.47	0.811	0 - 0.834	7.03	0.847	0.819	0.014	0.759 - 0.88	0.001	significant
Schedule (i)	1002246	Mellow Sticks	0 - 0.834	9.52	0.979	0 - 0.834	8.93	0.951	0 - 0.834	9.01	0.955	0.961	0.009	0.924 - 0.999	0.000	significant
Schedule (i)	1002247	Fresh Orbs	0 - 0.834	8.17	0.912	0 - 0.834	8.82	0.946	0 - 0.834	9.06	0.957	0.938	0.013	0.88 - 0.996	0.001	significant
Schedule (ii)	1002241	Ariva Wintergreen	1.11 - 3.33	1.64	0.215	1.11 - 3.34	1.81	0.258	1.11 - 3.34	1.81	0.258	0.244	0.014	0.183 - 0.305	0.001	significant
Schedule (ii)	1002242	Copenhagen Long Cut	1.11 - 3.33	1.74	0.241	1.11 - 3.33	1.56	0.192	1.11 - 3.33	1.53	0.183	0.205	0.018	0.128 - 0.283	0.002	significant
Schedule (ii)	1002243	Fresh Strips	1.11 - 3.33	1.44	0.157	1.11 - 3.33	1.57	0.196	1.11 - 3.33	1.62	0.208	0.187	0.015	0.121 - 0.254	0.001	significant
Schedule (ii)	1002244	2S3	1.11 - 3.34	1.75	0.243	1.11 - 3.33	1.98	0.297	1.11 - 3.34	2.14	0.331	0.290	0.026	0.179 - 0.401	0.003	significant
Schedule (ii)	1002245	Camel SNUS Frost	1.11 - 3.34	1.52	0.180	1.11 - 3.33	1.70	0.230	1.11 - 3.34	1.65	0.218	0.210	0.015	0.145 - 0.274	0.001	significant
Schedule (ii)	1002246	Mellow Sticks	1.11 - 3.33	1.66	0.221	1.11 - 3.34	1.95	0.290	1.11 - 3.34	1.52	0.181	0.230	0.032	0.093 - 0.368	0.006	significant
Schedule (ii)	1002247	Fresh Orbs	1.11 - 3.33	2.01	0.303	1.11 - 3.33	1.73	0.239	1.11 - 3.33	1.82	0.259	0.267	0.019	0.185 - 0.349	0.002	significant

**One-Way ANOVA of Mean 'Extracted Smokeless Tobacco'**  
**LOG[Slope] Estimates Among Test Samples**

## Schedule (i)

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
Among Samples	0.0601	6	0.0100	24.5	<b>0.000</b>
Within Samples	0.0057	14	0.0004		
Total (Corr.)	0.0658	20			

## Schedule (ii)

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
Among Samples	0.0238	6	0.0040	3.1	<b>0.040</b>
Within Samples	0.0182	14	0.0013		
Total (Corr.)	0.0420	20			

One-way ANOVA analysis indicates significant differences (at  $\alpha = 0.05$ ) among mean log-transformed 'Extracted Smokeless Tobacco' specific activity slope estimates for test samples under Treatment Schedules (i) and (ii).

**Ratio (Max ÷ Min) of Standard Deviations of log-transformed**  
**'Extracted Smokeless Tobacco' Slope Estimates and**  
**Corresponding Method of Comparison**

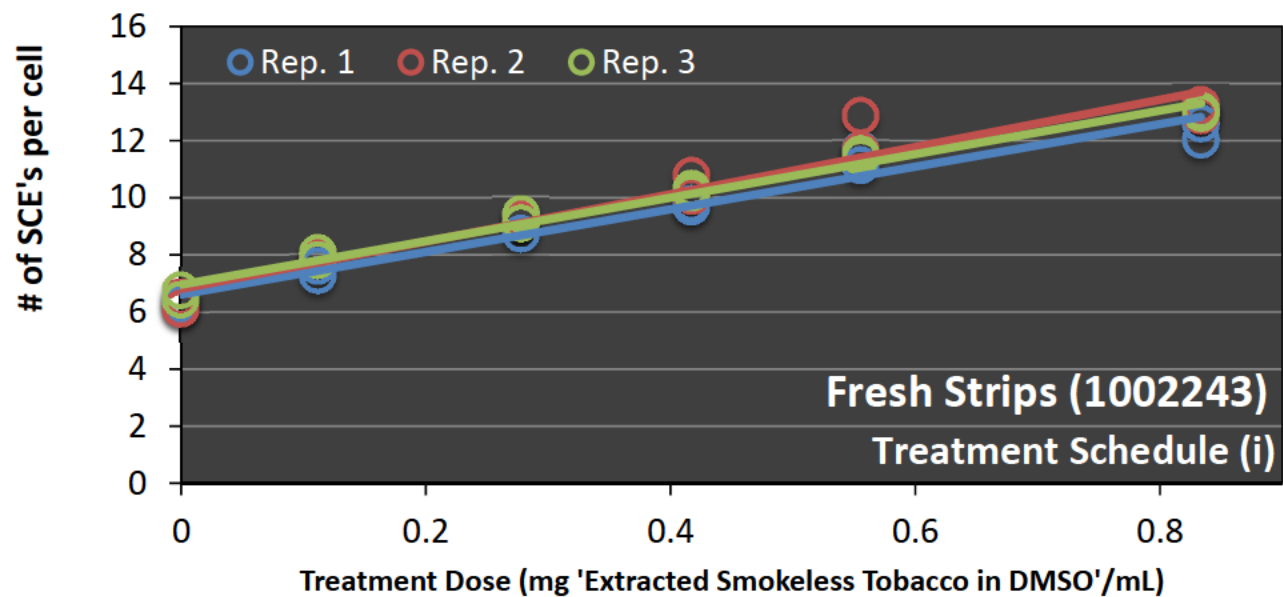
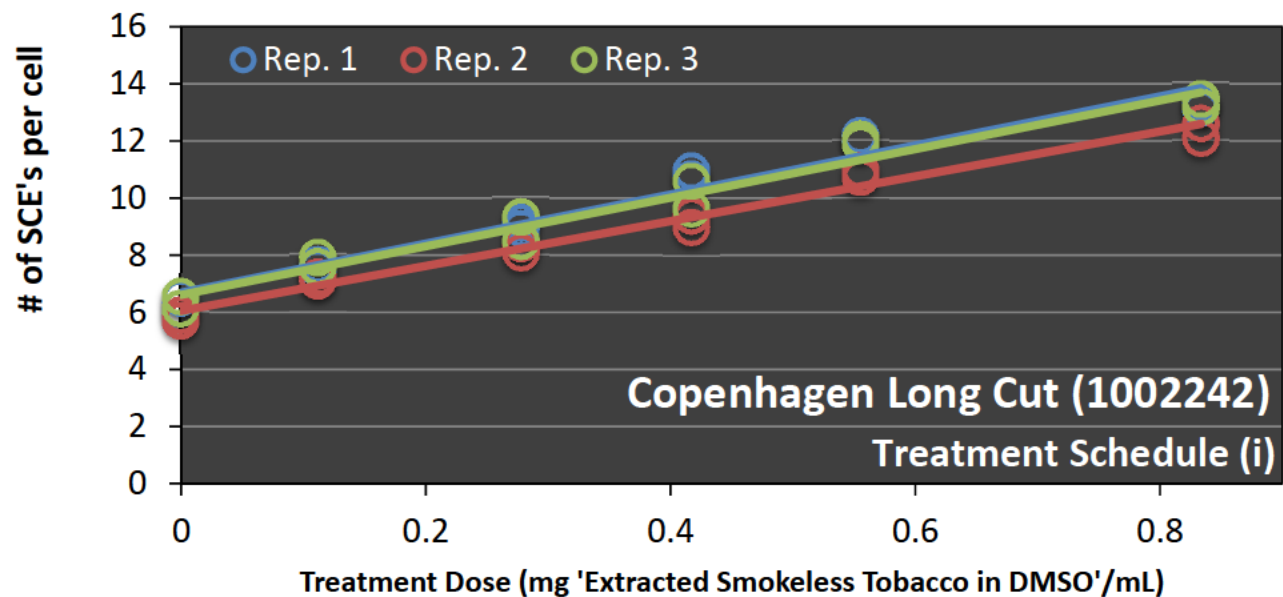
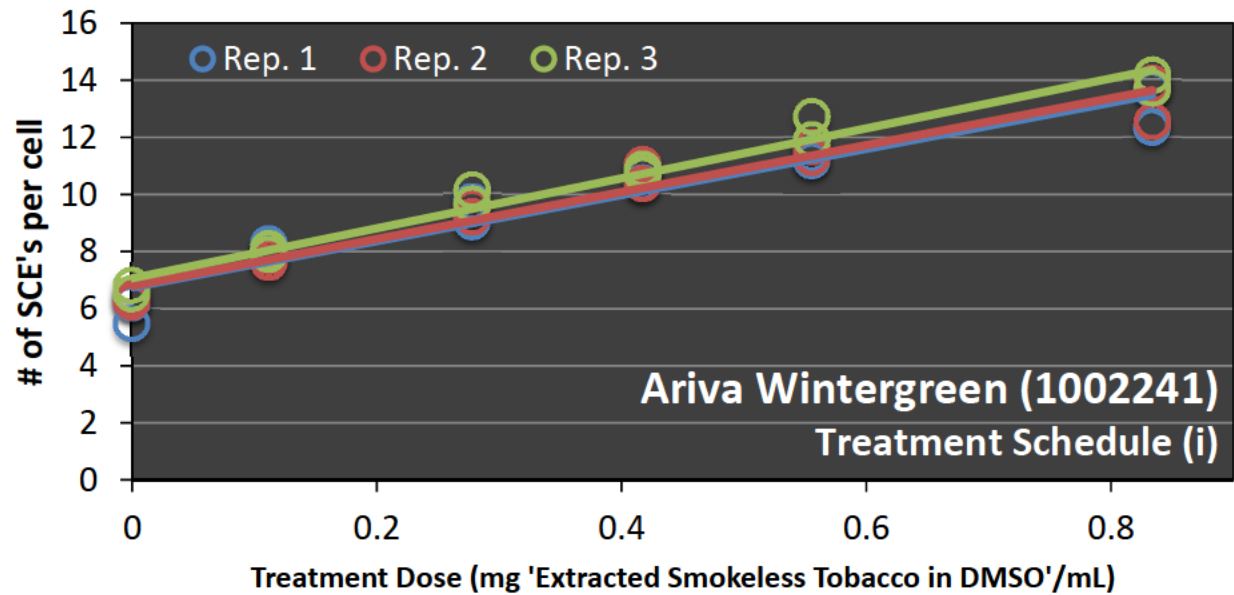
Treatment Schedule	Std. Dev. Ratio (Max ÷ Min)	Method of Comparison
Schedule (i)	2.2	ANOVA (equal variance)
Schedule (ii)	2.2	ANOVA (equal variance)

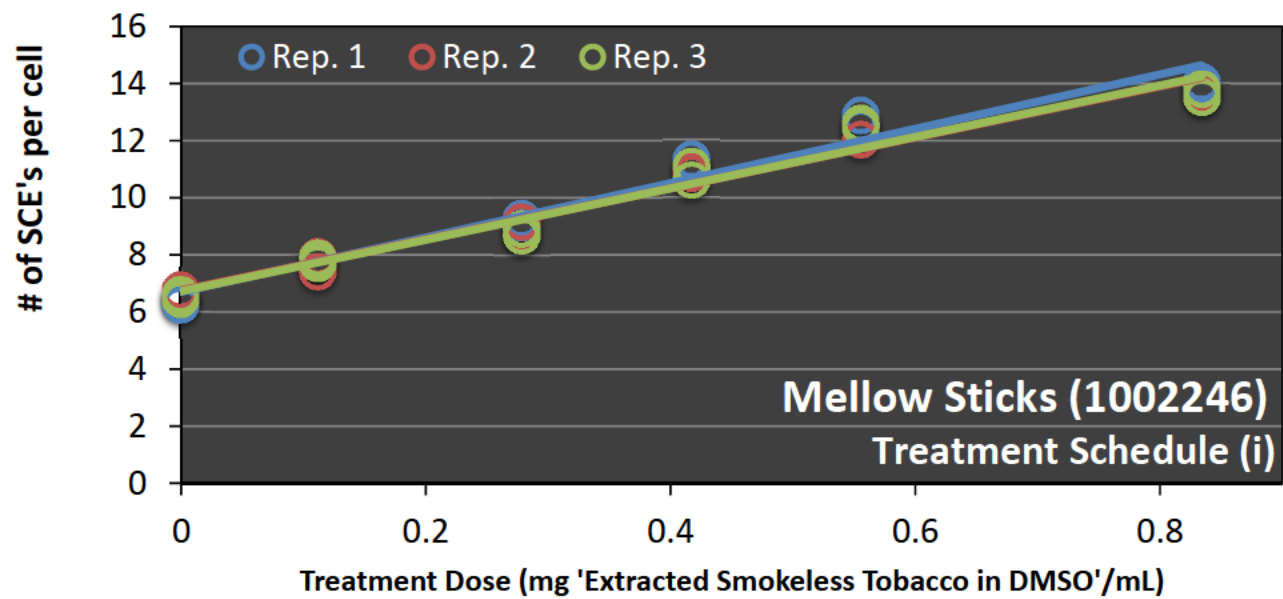
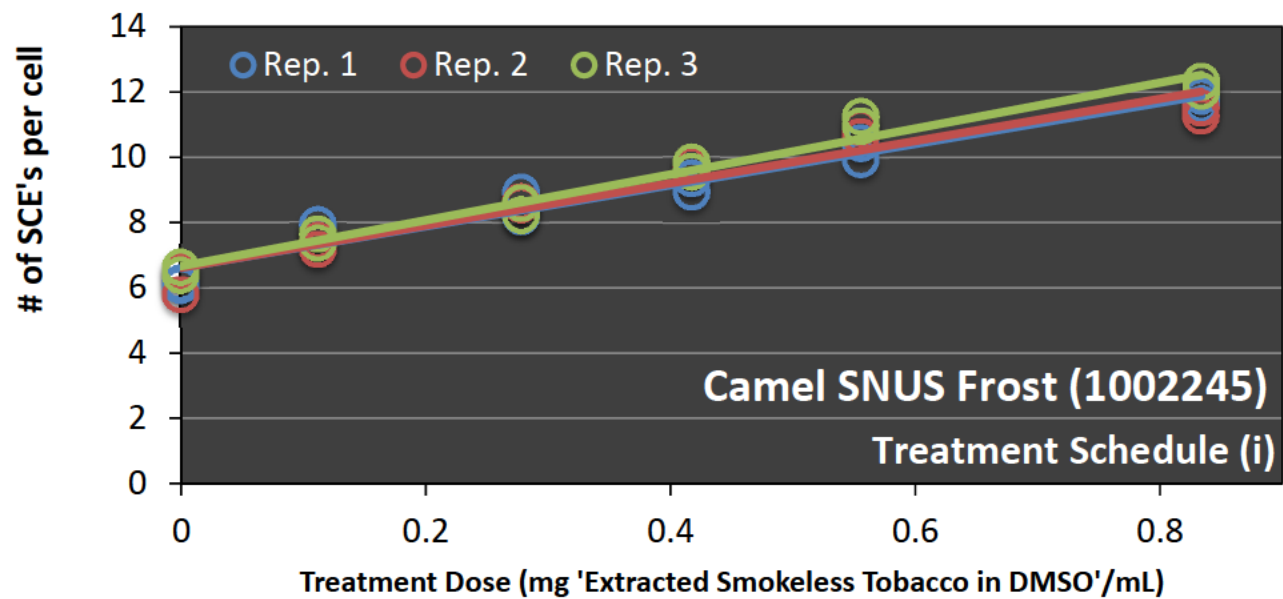
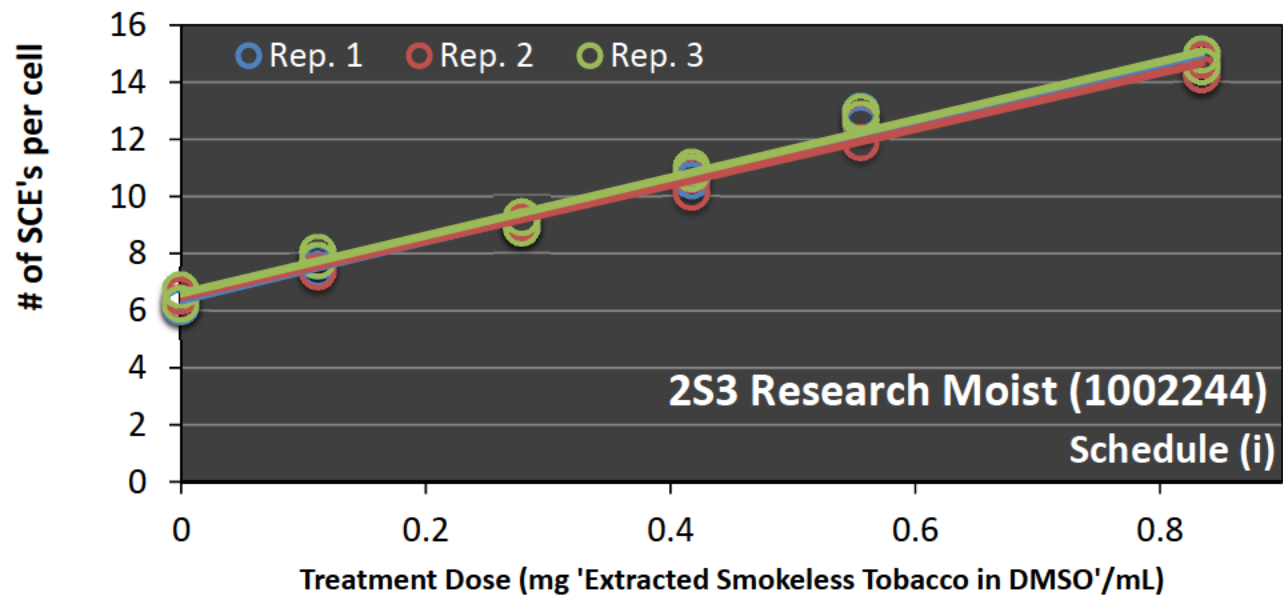
**ANOVA-Based Comparisons of Average 'Extracted Smokeless Tobacco' LOG[Slope] for  
Contrasts of Interest using Bonferroni-adjusted p-values**

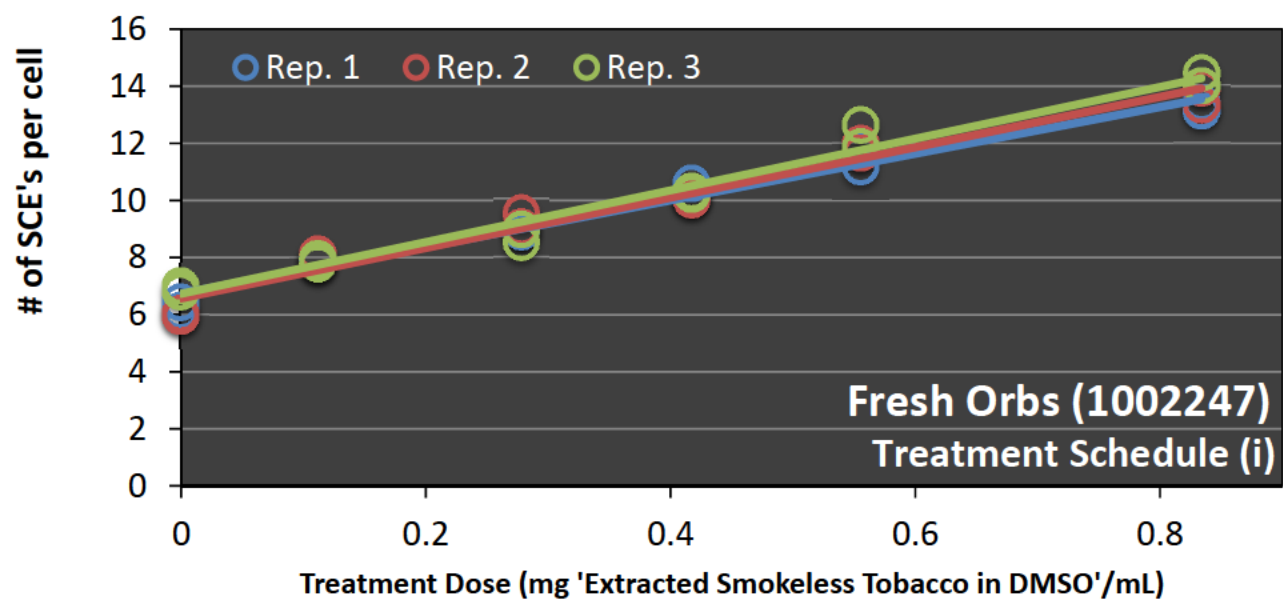
ANOVA-Based Comparison	Schedule (i)			Schedule (ii)		
	f-ratio	p-value	significance at $\alpha = 0.05$	f-ratio	p-value	significance at $\alpha = 0.05$
Ariva Wintergreen vs. Copenhagen Long Cut	0.01	0.9196	not significant	1.70	0.2135	not significant
Ariva Wintergreen vs. Fresh Strips	3.39	0.0869	not significant	3.68	0.0756	not significant
Ariva Wintergreen vs. 2S3	25.08	0.0002	<b>significant</b>	2.47	0.1380	not significant
Ariva Wintergreen vs. Camel SNUS Frost	38.05	0.0000	<b>significant</b>	1.35	0.2642	not significant
Ariva Wintergreen vs. Mellow Sticks	5.91	0.0291	not significant	0.21	0.6545	not significant
Ariva Wintergreen vs. Fresh Orbs	1.05	0.3232	not significant	0.63	0.4414	not significant
Copenhagen Long Cut vs. Fresh Strips	3.02	0.1041	not significant	0.38	0.5480	not significant
Copenhagen Long Cut vs. 2S3	26.12	0.0002	<b>significant</b>	8.27	0.0122	not significant
Copenhagen Long Cut vs. Camel SNUS Frost	36.79	0.0000	<b>significant</b>	0.02	0.8905	not significant
Copenhagen Long Cut vs. Mellow Sticks	6.42	0.0239	not significant	0.72	0.4117	not significant
Copenhagen Long Cut vs. Fresh Orbs	1.27	0.2788	not significant	4.39	0.0548	not significant
Fresh Strips vs. 2S3	46.90	0.0000	<b>significant</b>	12.19	0.0036	not significant
Fresh Strips vs. Camel SNUS Frost	18.72	0.0007	<b>significant</b>	0.57	0.4623	not significant
Fresh Strips vs. Mellow Sticks	18.25	0.0008	<b>significant</b>	2.14	0.1659	not significant
Fresh Strips vs. Fresh Orbs	8.21	0.0125	not significant	7.35	0.0169	not significant
2S3 vs. Camel SNUS Frost	124.90	0.0000	<b>significant</b>	7.49	0.0161	not significant
2S3 vs. Mellow Sticks	6.64	0.0220	not significant	4.12	0.0618	not significant
2S3 vs. Fresh Orbs	15.87	0.0014	<b>significant</b>	0.61	0.4479	not significant
Camel SNUS Frost vs. Mellow Sticks	73.95	0.0000	<b>significant</b>	0.50	0.4919	not significant
Camel SNUS Frost vs. Fresh Orbs	51.73	0.0000	<b>significant</b>	3.82	0.0708	not significant
Mellow Sticks vs. Fresh Orbs	1.98	0.1812	not significant	1.56	0.2319	not significant

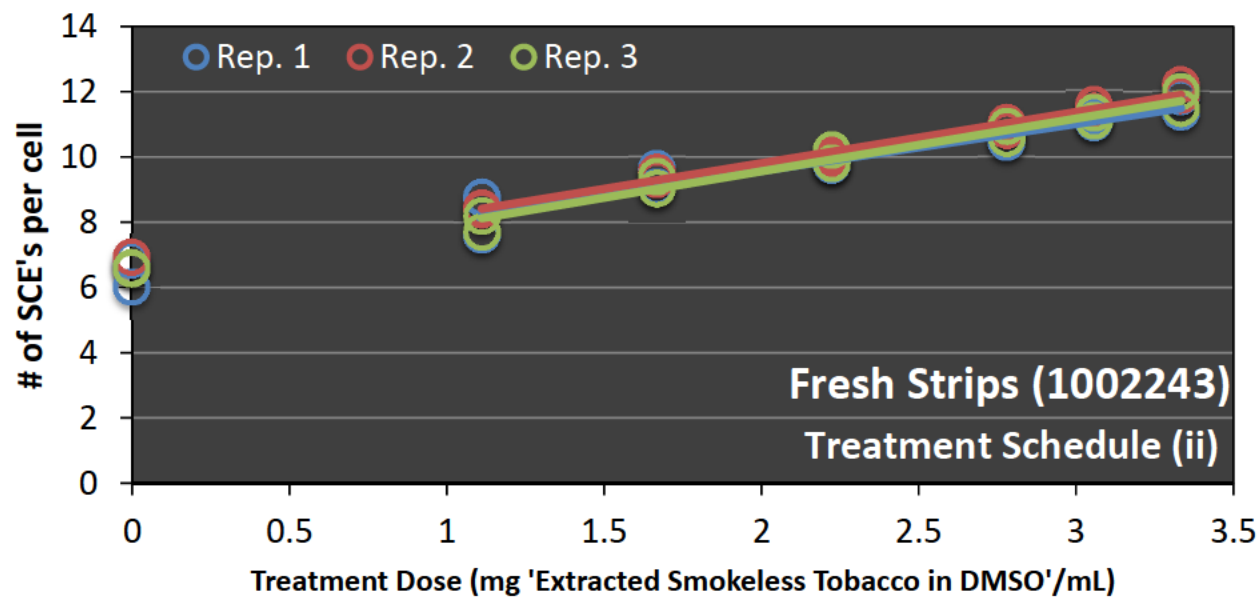
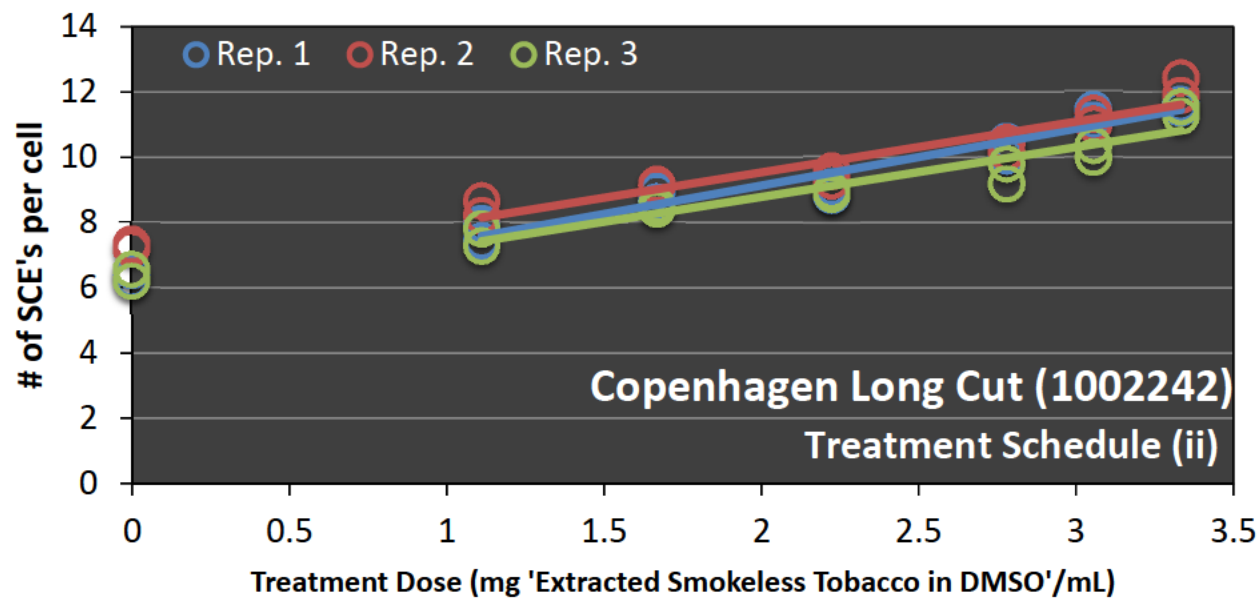
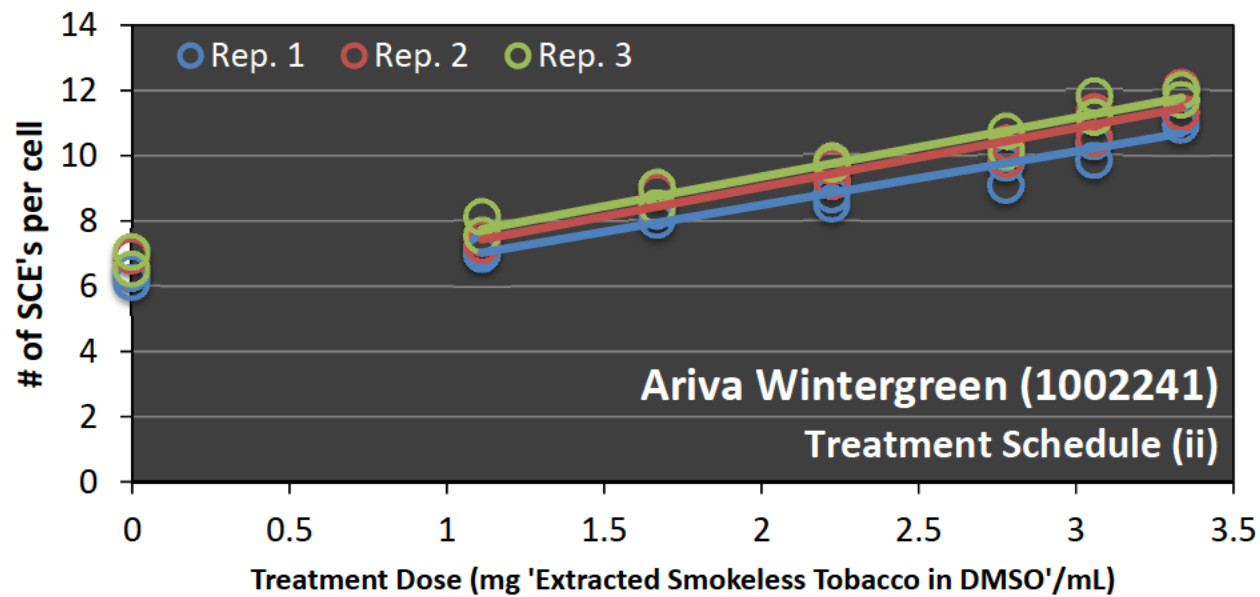
ANOVA-based comparison p-values less than the Bonferroni-adjusted  $\alpha = 0.05$  indicate that significant differences in mean log-transformed 'extracted smokeless tobacco' slope were as follows under treatment schedule (i):

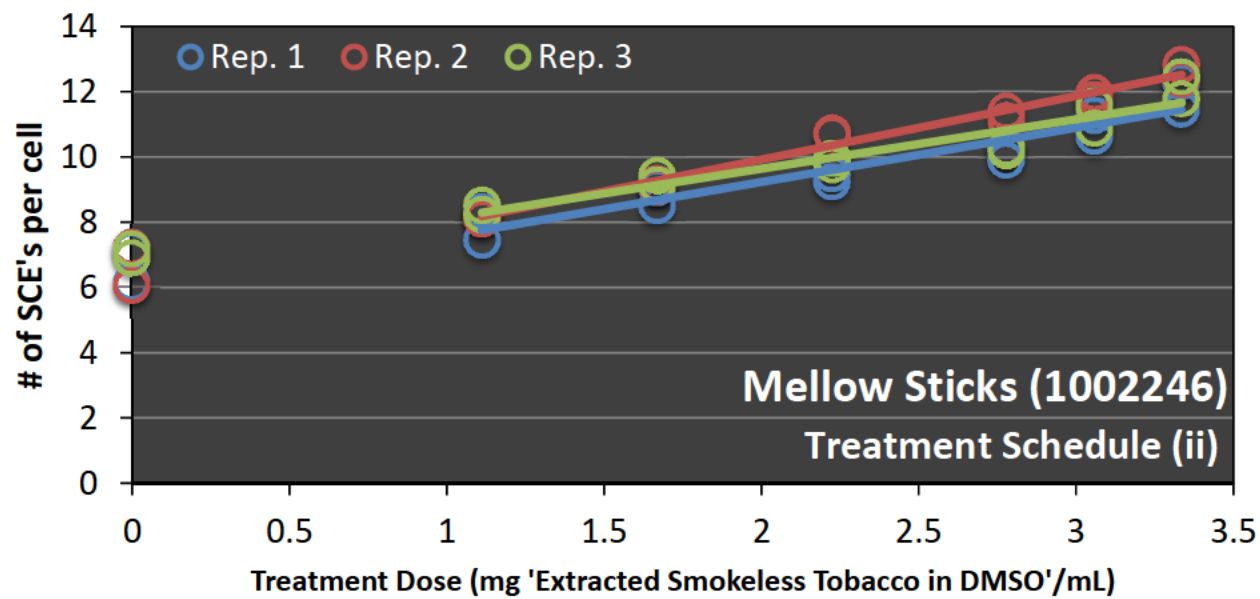
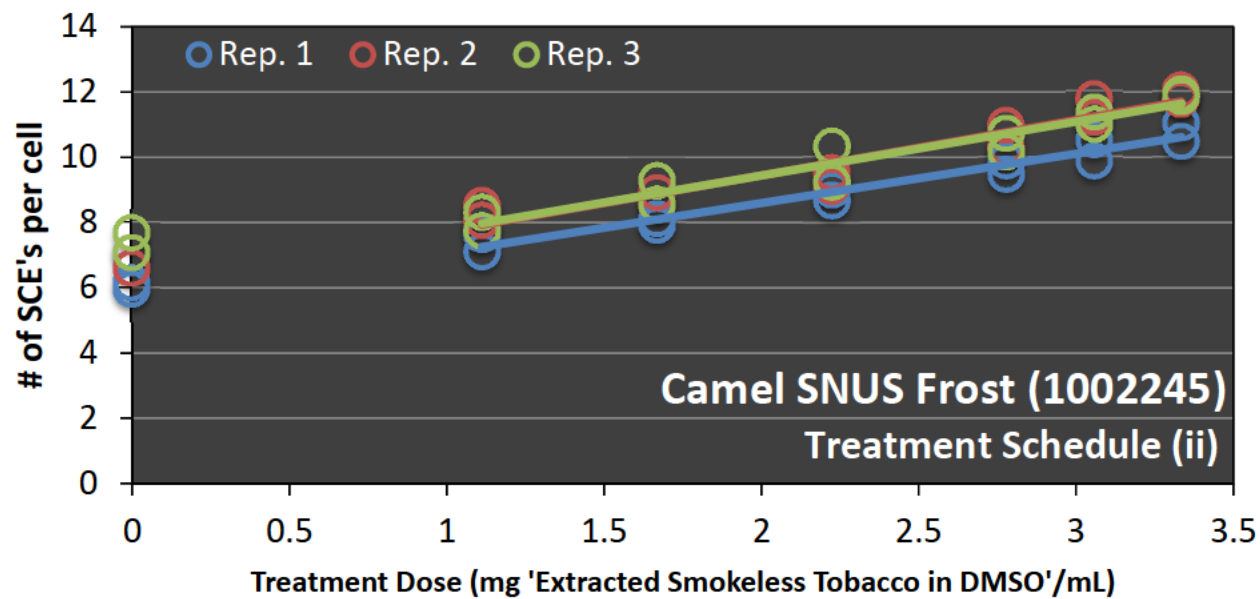
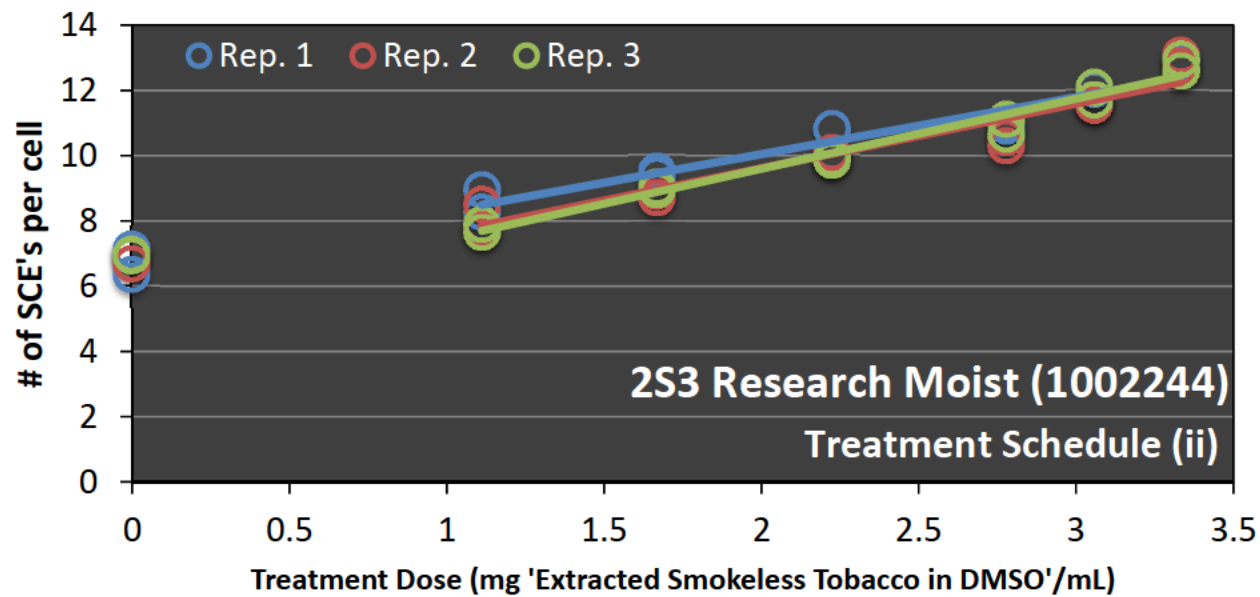
Schedule (i)			
Sample Description	LOG[Slope]		Homogenous Groupings
	Mean	Std. Err.	
Camel SNUS Frost	0.819	0.014	<b>X</b>
Fresh Strips	0.891	0.014	<b>X</b>
Copenhagen Long Cut	0.920	0.012	<b>XX</b>
Ariva Wintergreen	0.921	0.011	<b>XX</b>
Fresh Orbs	0.938	0.013	<b>XX</b>
Mellow Sticks	0.961	0.009	<b>XX</b>
2S3	1.00	0.01	<b>X</b>

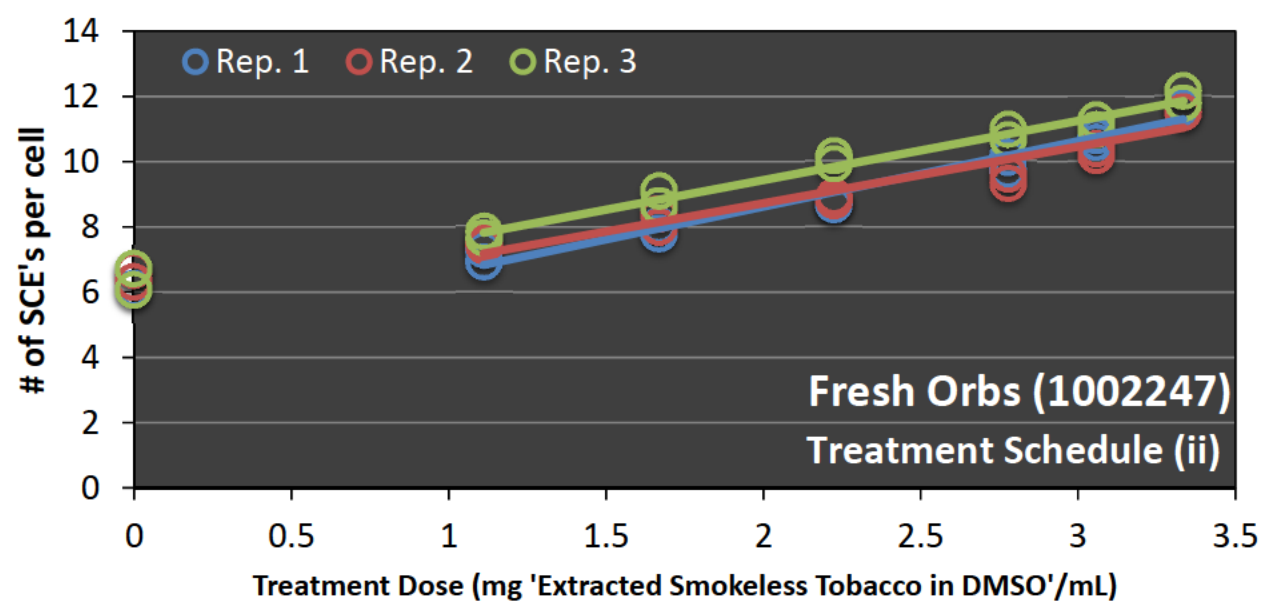


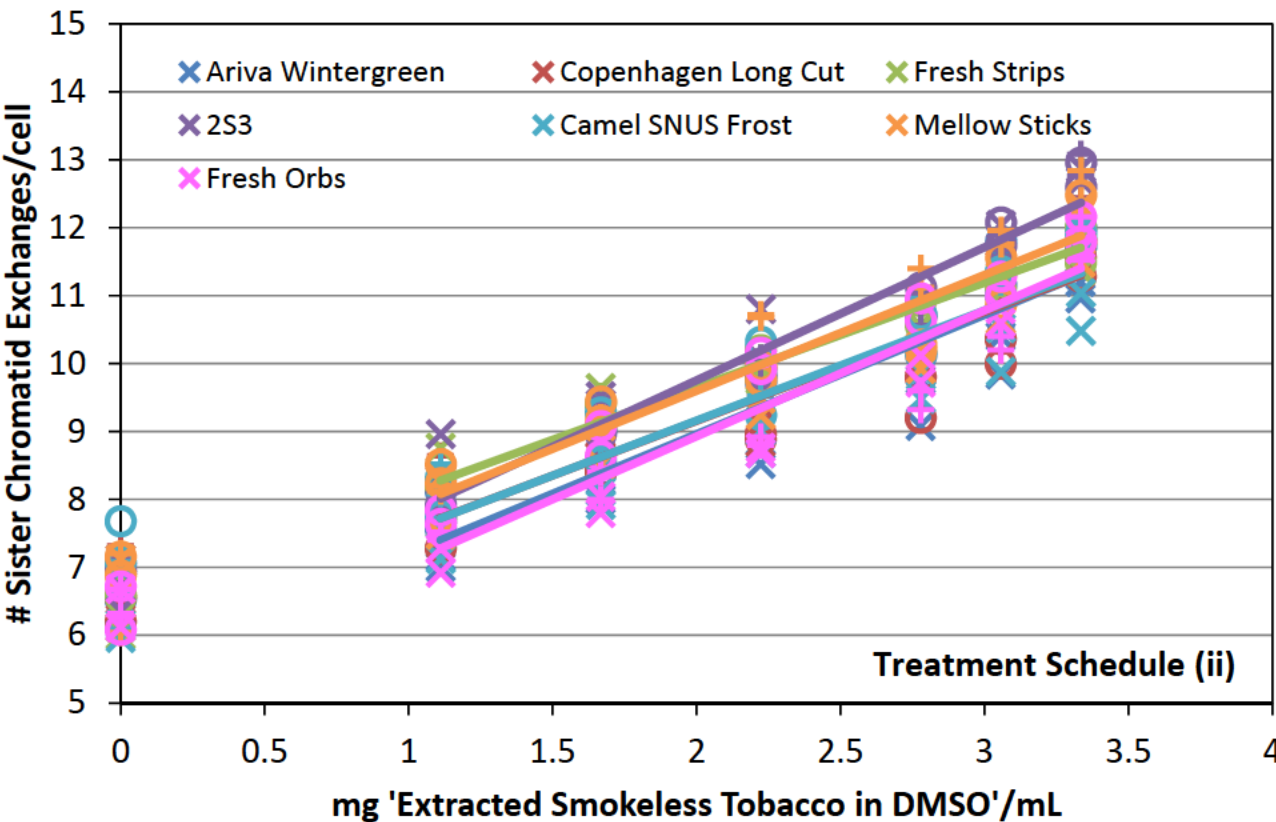
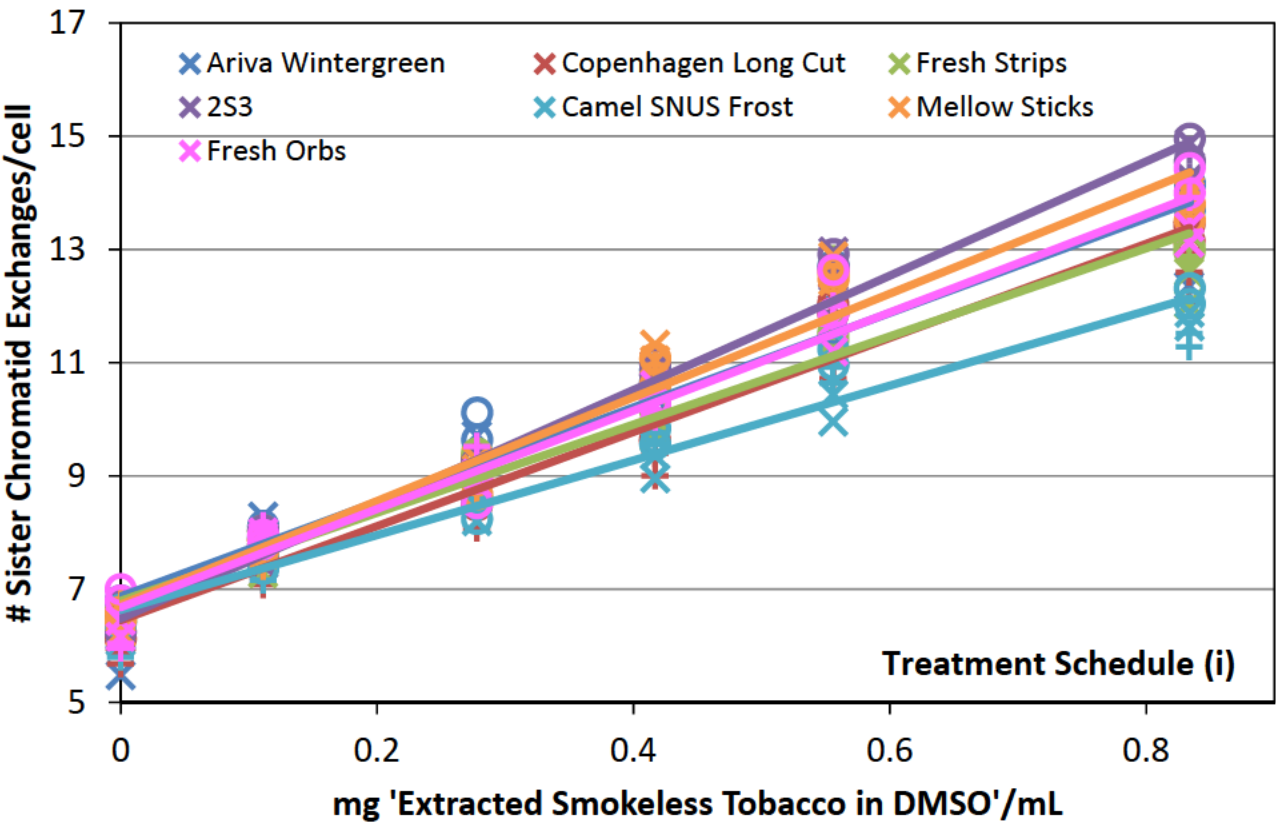














**Slope Analysis of the Linear Portion of the Dose-Response Curve**  
**[Number of Sister Chromatid Exchanges per Cell / (mg 'Extracted Moisture-Corrected Smokeless Tobacco in DMSO'/mL)]**

			(Number of SCE's/Cell) / (mg 'extracted moisture-corrected smokeless tobacco'/mL)													
Treatment Schedule	Sample ID	Sample Description	Replicate 1			Replicate 2			Replicate 3			Statistics for Replicate			T-test Analysis	
			Dose Range	slope	LOG	Dose Range	slope	LOG	Dose Range	slope	LOG	LOG[Slope] Estimates			(H <sub>0</sub> : mean[Slope] = 0)	
			(mg 'ST-H <sub>2</sub> O'/mL)		[slope]	(mg 'ST-H <sub>2</sub> O'/mL)		[slope]	(mg 'ST-H <sub>2</sub> O'/mL)		[slope]	Mean	Std. Err.	95% C.I.	p-value	significance
Schedule (i)	1002241	Ariva Wintergreen	0 - 0.804	8.37	0.923	0 - 0.804	8.52	0.930	0 - 0.805	9.07	0.958	0.937	0.011	0.892 - 0.982	0.001	significant
Schedule (i)	1002242	Copenhagen Long Cut	0 - 0.422	17.0	1.23	0 - 0.422	15.5	1.19	0 - 0.422	16.8	1.23	1.22	0.01	1.16 - 1.27	0.001	significant
Schedule (i)	1002243	Fresh Strips	0 - 0.754	8.25	0.917	0 - 0.754	9.15	0.961	0 - 0.754	8.42	0.925	0.934	0.014	0.875 - 0.993	0.001	significant
Schedule (i)	1002244	2S3	0 - 0.385	22.3	1.35	0 - 0.385	21.2	1.33	0 - 0.385	22.0	1.34	1.34	0.01	1.31 - 1.37	0.000	significant
Schedule (i)	1002245	Camel SNUS Frost	0 - 0.586	8.98	0.953	0 - 0.586	9.20	0.964	0 - 0.586	10.0	1.00	0.972	0.014	0.912 - 1.033	0.001	significant
Schedule (i)	1002246	Mellow Sticks	0 - 0.769	10.3	1.01	0 - 0.77	9.67	0.986	0 - 0.77	9.76	0.990	0.996	0.009	0.958 - 1.034	0.000	significant
Schedule (i)	1002247	Fresh Orbs	0 - 0.795	8.57	0.933	0 - 0.795	9.25	0.966	0 - 0.795	9.50	0.978	0.959	0.013	0.901 - 1.017	0.001	significant
Schedule (ii)	1002241	Ariva Wintergreen	1.07 - 3.22	1.70	0.231	1.07 - 3.22	1.88	0.274	1.07 - 3.22	1.88	0.274	0.259	0.014	0.198 - 0.321	0.001	significant
Schedule (ii)	1002242	Copenhagen Long Cut	0.563 - 1.69	3.44	0.537	0.563 - 1.69	3.07	0.488	0.563 - 1.69	3.01	0.479	0.501	0.018	0.424 - 0.579	0.002	significant
Schedule (ii)	1002243	Fresh Strips	1.01 - 3.02	1.59	0.201	1.01 - 3.02	1.74	0.240	1.01 - 3.02	1.79	0.252	0.231	0.015	0.165 - 0.297	0.001	significant
Schedule (ii)	1002244	2S3	0.514 - 1.54	3.78	0.578	0.514 - 1.54	4.29	0.632	0.514 - 1.54	4.64	0.666	0.625	0.026	0.515 - 0.736	0.003	significant
Schedule (ii)	1002245	Camel SNUS Frost	0.782 - 2.35	2.15	0.333	0.782 - 2.34	2.42	0.383	0.782 - 2.35	2.35	0.371	0.362	0.015	0.298 - 0.427	0.001	significant
Schedule (ii)	1002246	Mellow Sticks	1.03 - 3.08	1.80	0.256	1.03 - 3.08	2.11	0.325	1.03 - 3.08	1.64	0.215	0.265	0.032	0.128 - 0.403	0.006	significant
Schedule (ii)	1002247	Fresh Orbs	1.06 - 3.18	2.11	0.324	1.06 - 3.18	1.82	0.260	1.06 - 3.18	1.91	0.280	0.288	0.019	0.206 - 0.37	0.002	significant

**One-Way ANOVA of Mean 'Extracted Moisture-Corrected Smokeless Tobacco' LOG[Slope] Estimates Among Test Samples**

## Schedule (i)

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
Among Samples	0.4630	6	0.0772	188.7	0.000
Within Samples	0.0057	14	0.0004		
Total (Corr.)	0.4687	20			

## Schedule (ii)

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
Among Samples	0.3939	6	0.0656	50.5	0.000
Within Samples	0.0182	14	0.0013		
Total (Corr.)	0.4121	20			

One-way ANOVA analysis indicates significant differences (at  $\alpha = 0.05$ ) among mean log-transformed 'Extracted Moisture-Corrected Smokeless Tobacco' specific activity slope estimates for test samples under Treatment Schedules (i) and (ii).

**Ratio (Max ÷ Min) of Standard Deviations of log-transformed 'Extracted Moisture-Corrected Smokeless Tobacco' Slope Estimates and Corresponding Method of Comparison**

Treatment Schedule	Std. Dev. Ratio (Max ÷ Min)	Method of Comparison
Schedule (i)	2.2	ANOVA (equal variance)
Schedule (ii)	2.2	ANOVA (equal variance)

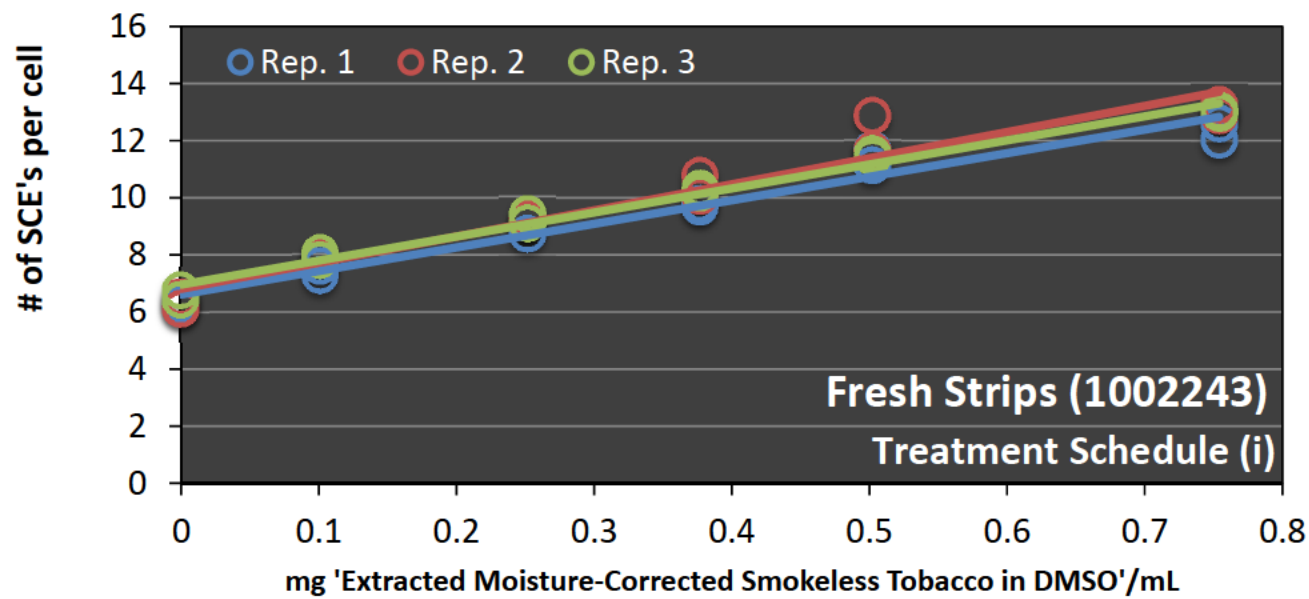
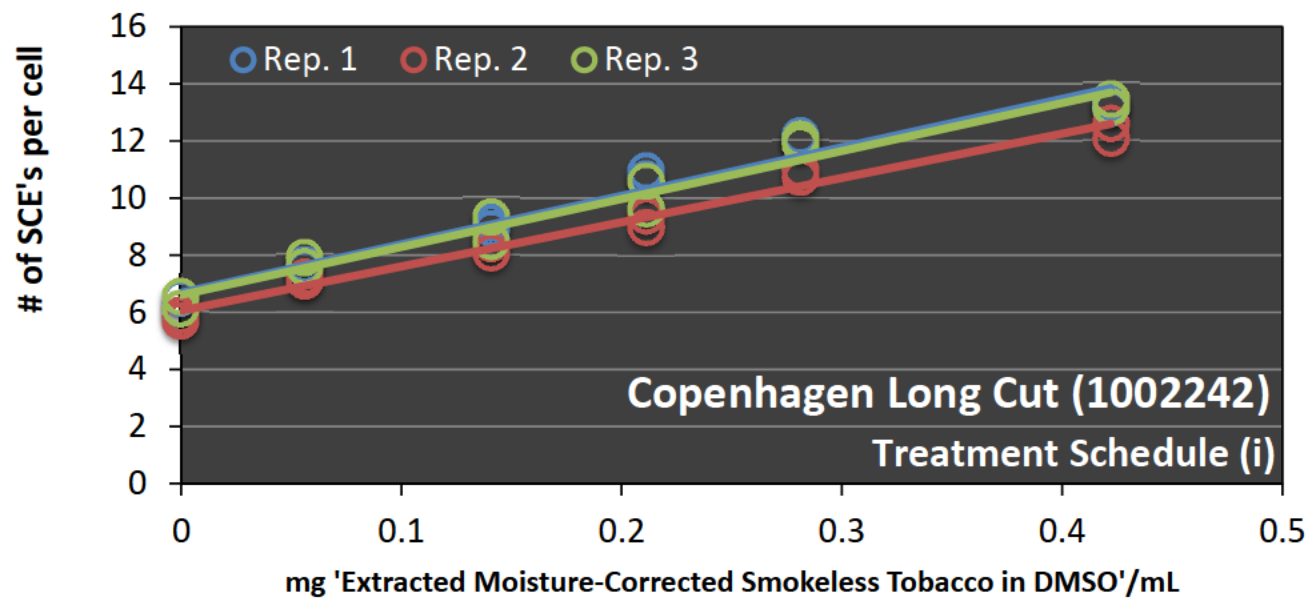
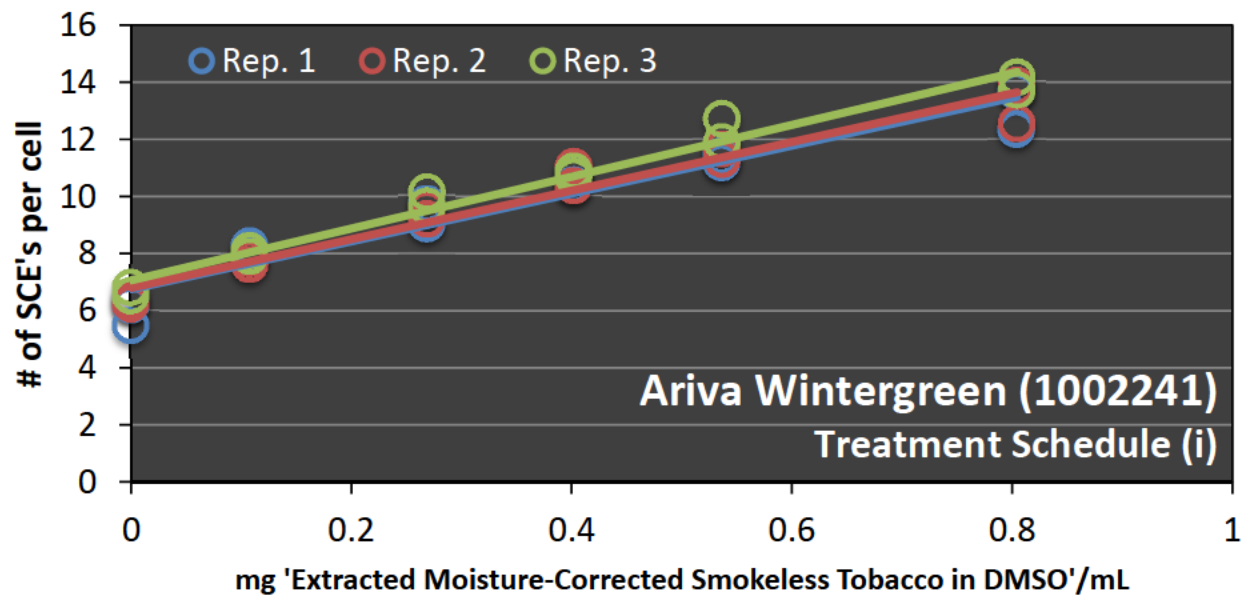
**ANOVA-Based Comparisons of Average 'Extracted Moisture-Corrected Smokeless Tobacco' LOG[Slope] for Contrasts of Interest using Bonferroni-adjusted p-values**

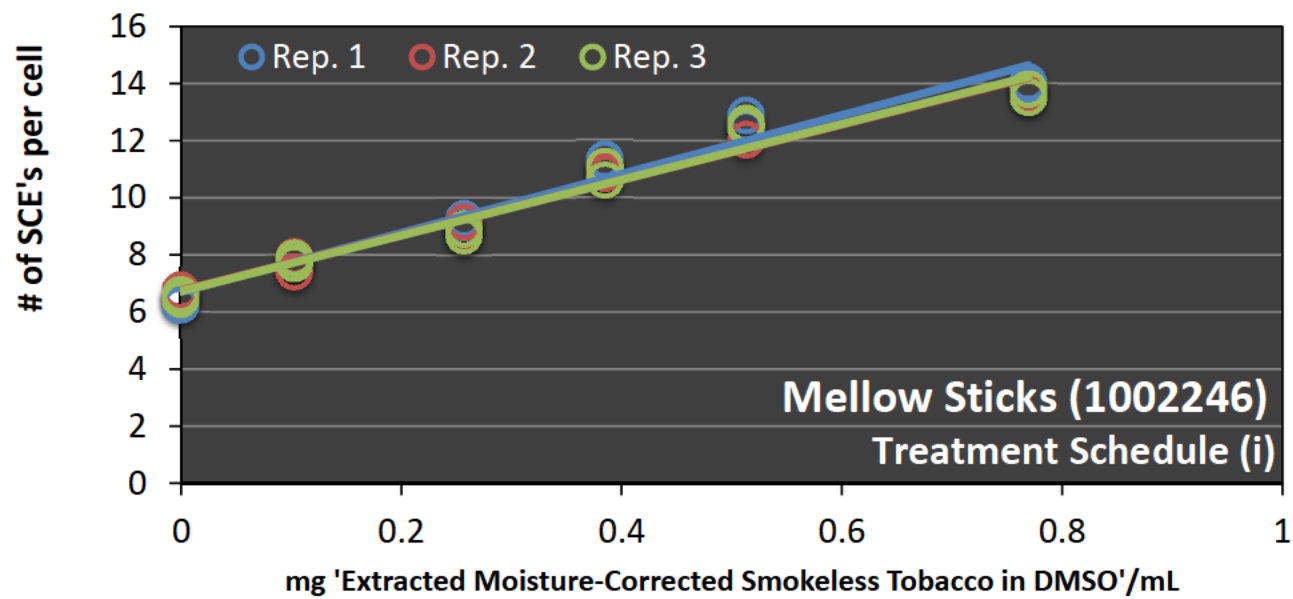
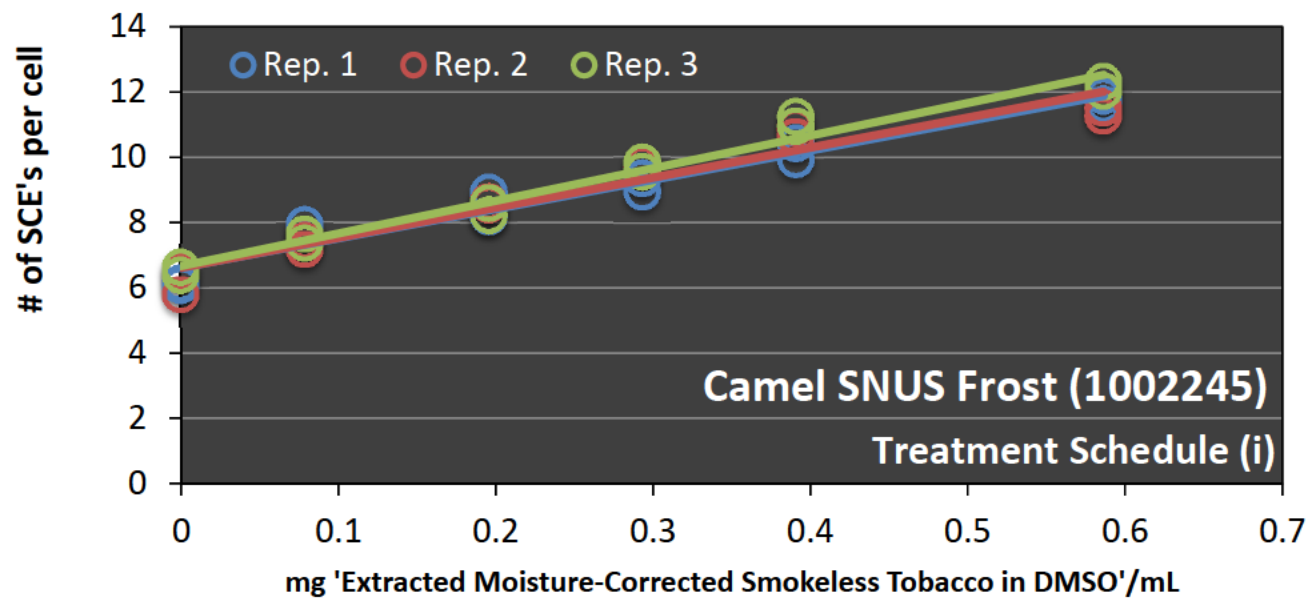
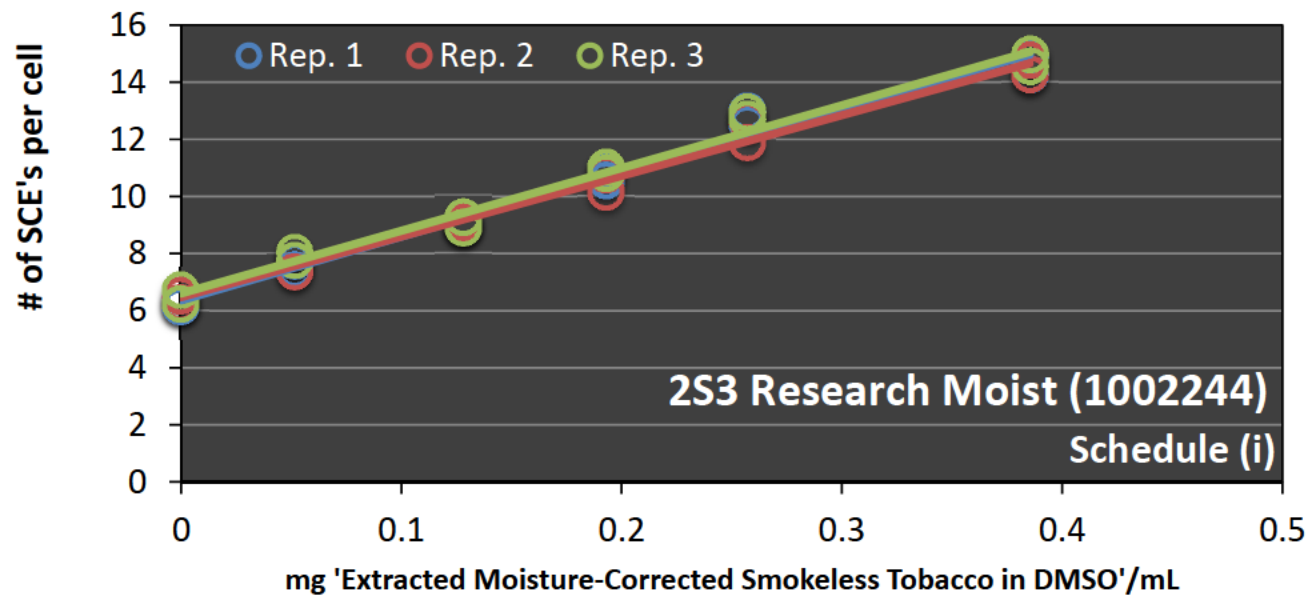
ANOVA-Based Comparison	Schedule (i)			Schedule (ii)		
	f-ratio	p-value	significance at $\alpha = 0.05$	f-ratio	p-value	significance at $\alpha = 0.05$
Ariva Wintergreen vs. Copenhagen Long Cut	284.09	0.0000	significant	67.36	0.0000	significant
Ariva Wintergreen vs. Fresh Strips	0.02	0.8807	not significant	0.95	0.3475	not significant
Ariva Wintergreen vs. 2S3	593.60	0.0000	significant	154.47	0.0000	significant
Ariva Wintergreen vs. Camel SNUS Frost	4.58	0.0503	not significant	12.23	0.0036	not significant
Ariva Wintergreen vs. Mellow Sticks	12.95	0.0029	not significant	0.04	0.8465	not significant
Ariva Wintergreen vs. Fresh Orbs	1.77	0.2045	not significant	0.93	0.3512	not significant
Copenhagen Long Cut vs. Fresh Strips	289.26	0.0000	significant	84.26	0.0000	significant
Copenhagen Long Cut vs. 2S3	56.38	0.0000	significant	17.82	0.0009	significant
Copenhagen Long Cut vs. Camel SNUS Frost	216.50	0.0000	significant	22.18	0.0003	significant
Copenhagen Long Cut vs. Mellow Sticks	175.74	0.0000	significant	64.16	0.0000	significant
Copenhagen Long Cut vs. Fresh Orbs	241.00	0.0000	significant	52.46	0.0000	significant
Fresh Strips vs. 2S3	601.07	0.0000	significant	179.59	0.0000	significant
Fresh Strips vs. Camel SNUS Frost	5.26	0.0378	not significant	19.97	0.0005	significant
Fresh Strips vs. Mellow Sticks	14.07	0.0021	significant	1.37	0.2618	not significant
Fresh Strips vs. Fresh Orbs	2.20	0.1600	not significant	3.75	0.0732	not significant
2S3 vs. Camel SNUS Frost	493.85	0.0000	significant	79.78	0.0000	significant
2S3 vs. Mellow Sticks	431.22	0.0000	significant	149.61	0.0000	significant
2S3 vs. Fresh Orbs	530.52	0.0000	significant	131.43	0.0000	significant
Camel SNUS Frost vs. Mellow Sticks	2.12	0.1672	not significant	10.89	0.0053	not significant
Camel SNUS Frost vs. Fresh Orbs	0.66	0.4313	not significant	6.41	0.0239	not significant
Mellow Sticks vs. Fresh Orbs	5.14	0.0397	not significant	0.59	0.4557	not significant

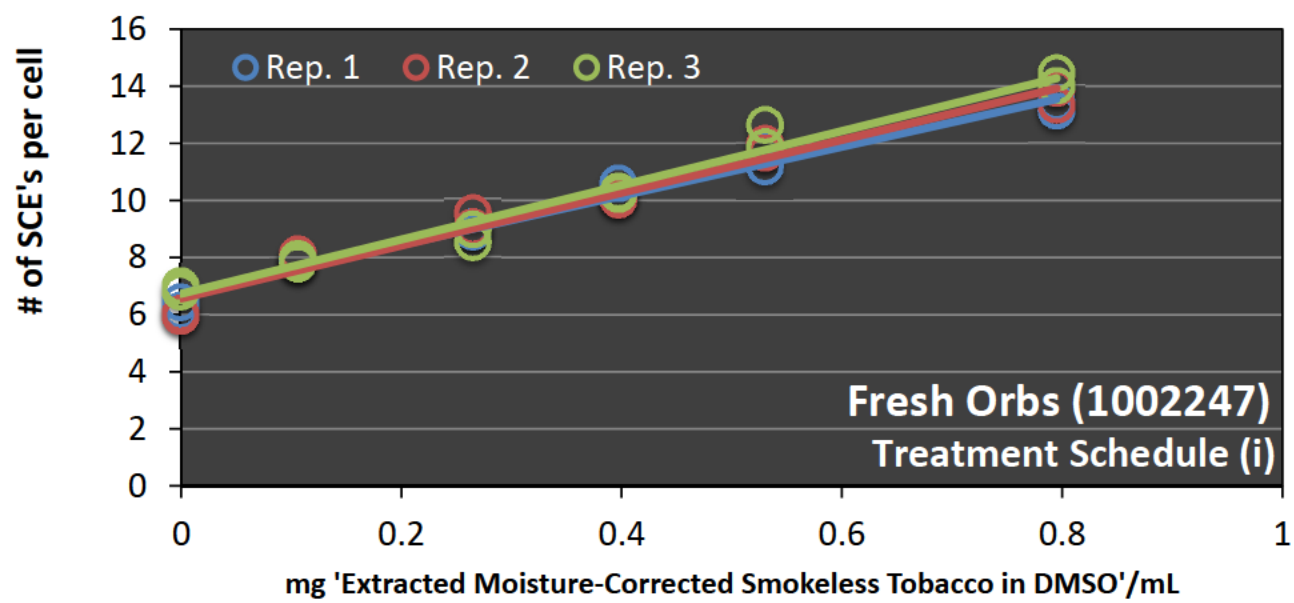
ANOVA-based comparison p-values less than the Bonferroni-adjusted  $\alpha = 0.05$  indicate that significant differences in mean log-transformed 'extracted moisture-corrected smokeless tobacco' slope were as follows under treatment schedules (i) and (ii):

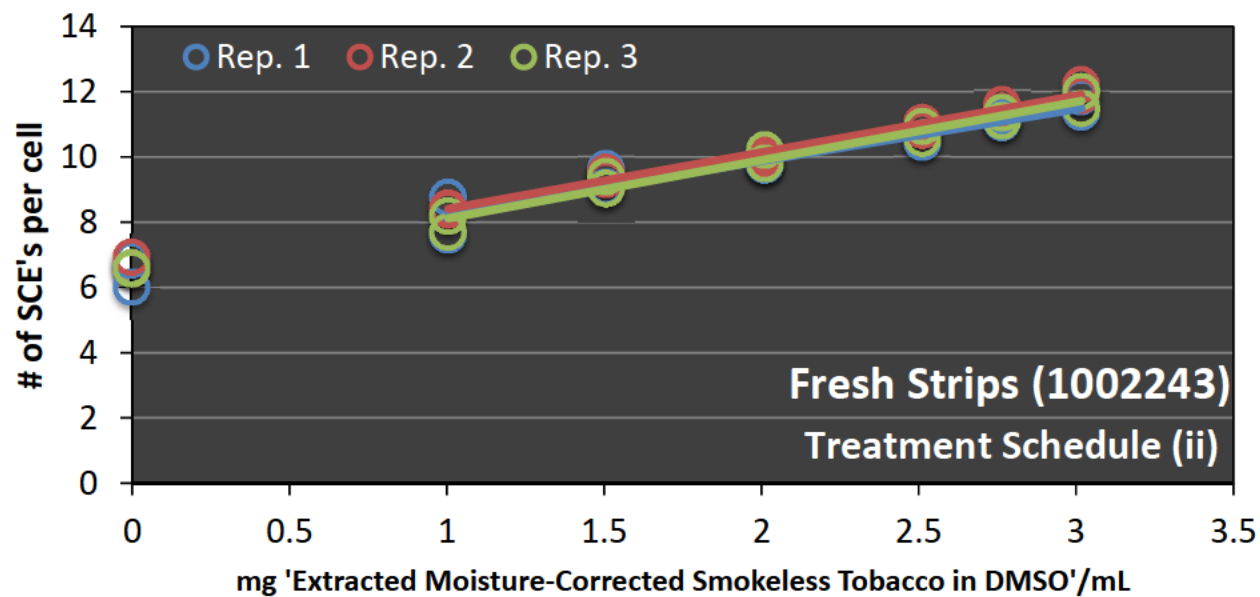
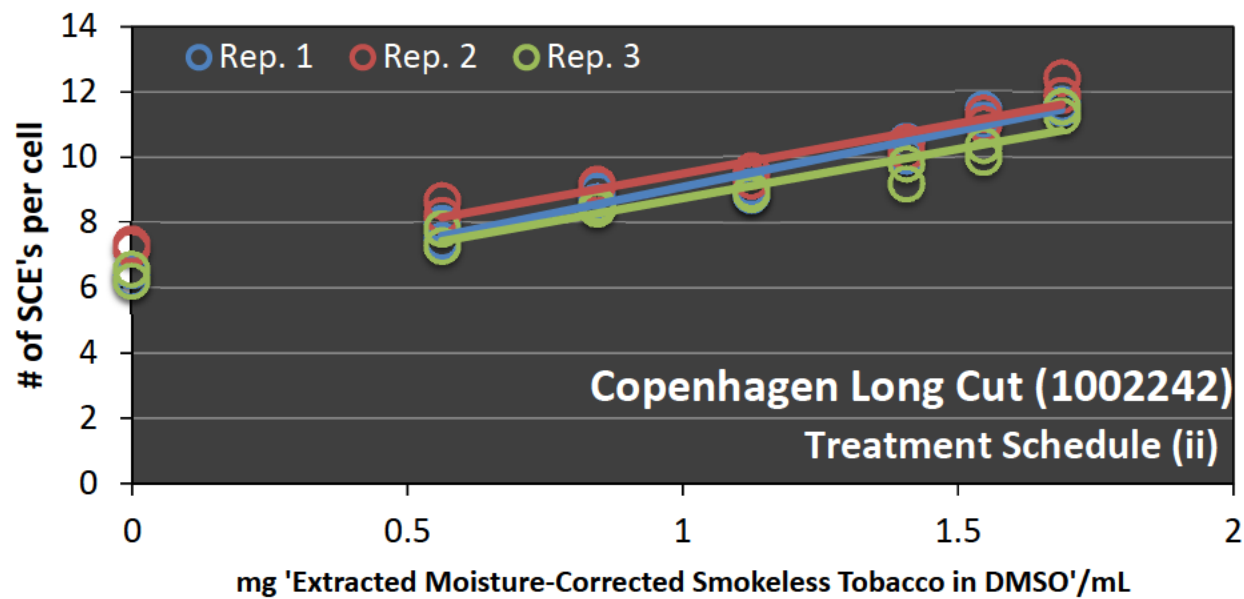
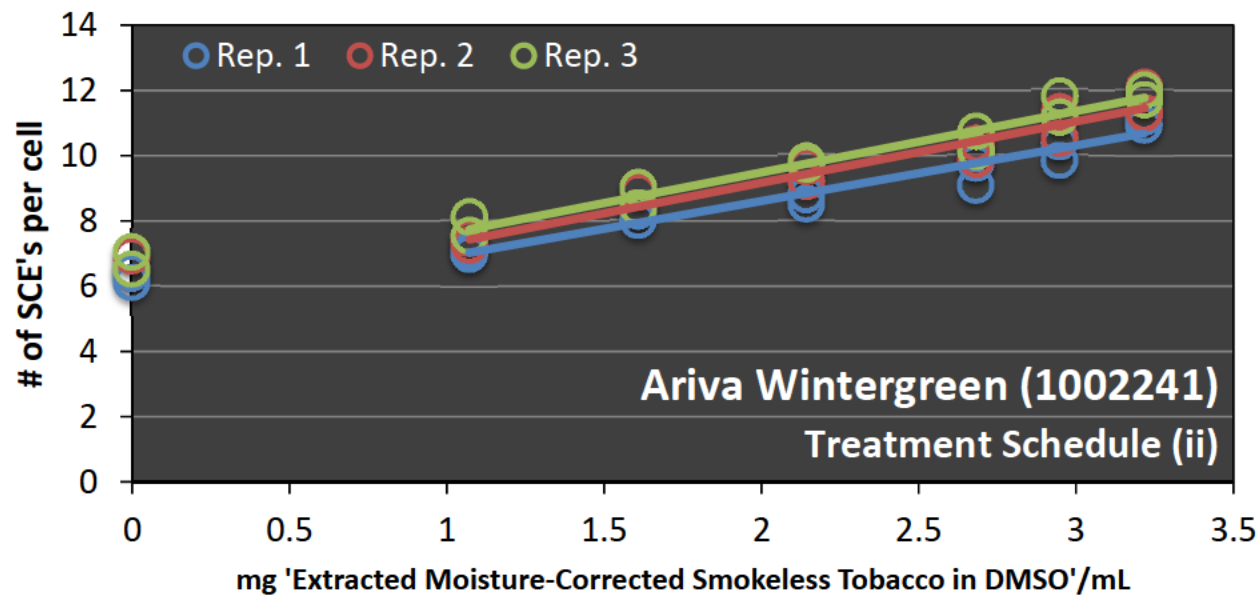
Schedule (i)			
Sample Description	LOG[Slope]		homogenous Groupings
	Mean	Std. Err.	
Fresh Strips	0.934	0.014	X
Ariva Wintergreen	0.937	0.011	XX
Fresh Orbs	0.959	0.013	XX
Camel SNUS Frost	0.972	0.014	XX
Mellow Sticks	0.996	0.009	X
Copenhagen Long Cut	1.22	0.01	X
2S3	1.34	0.01	X

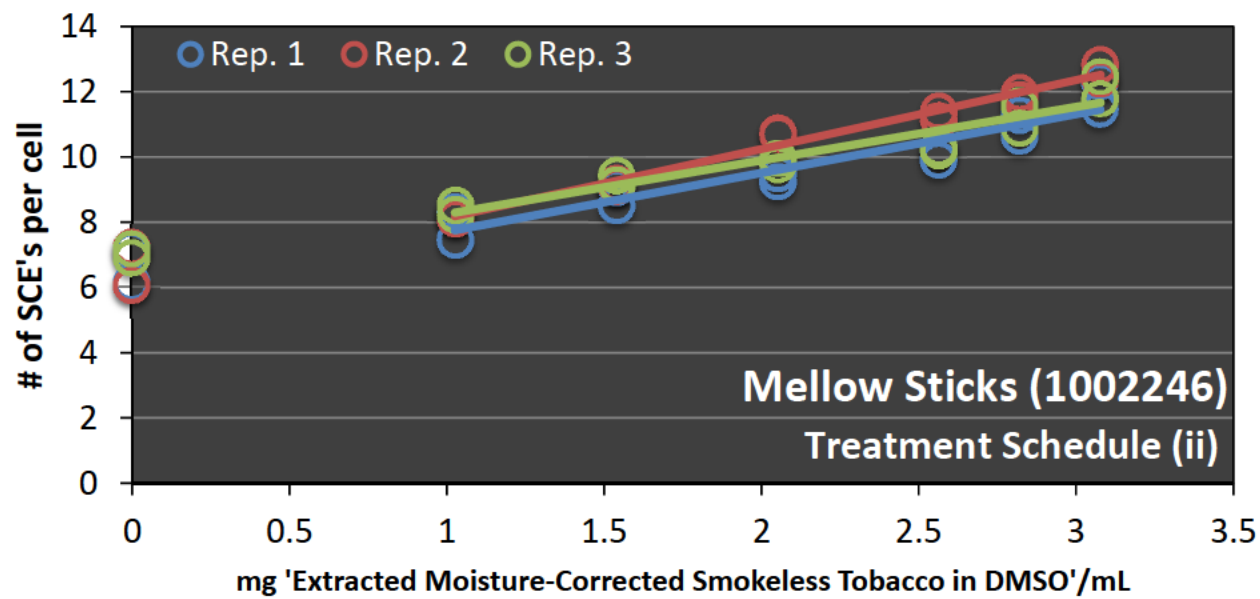
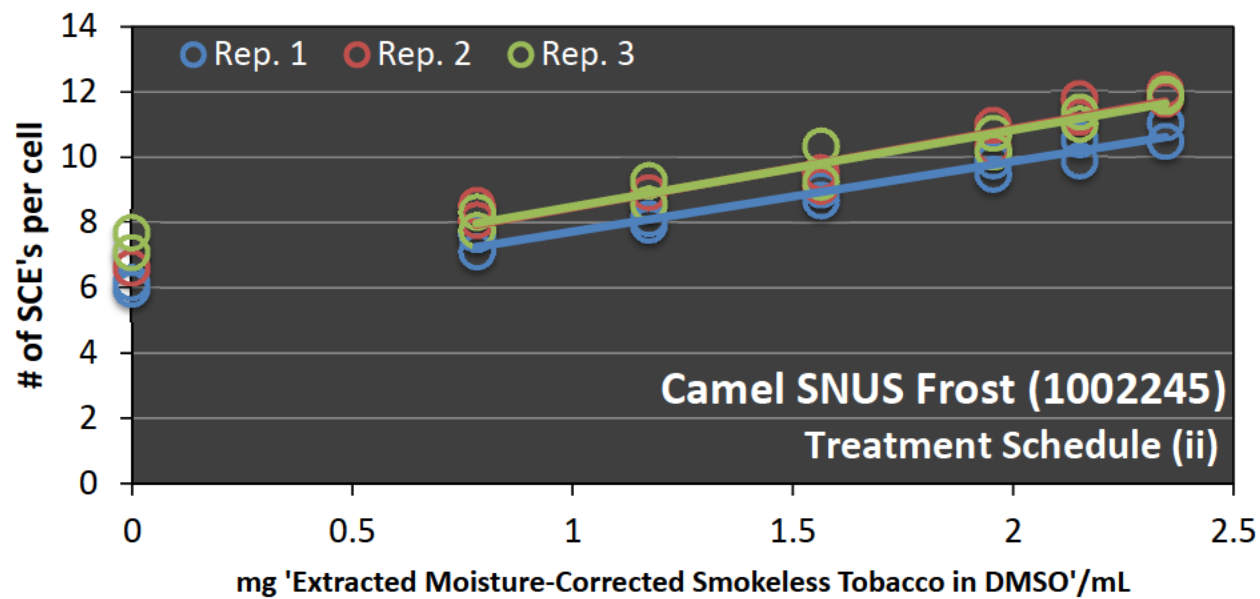
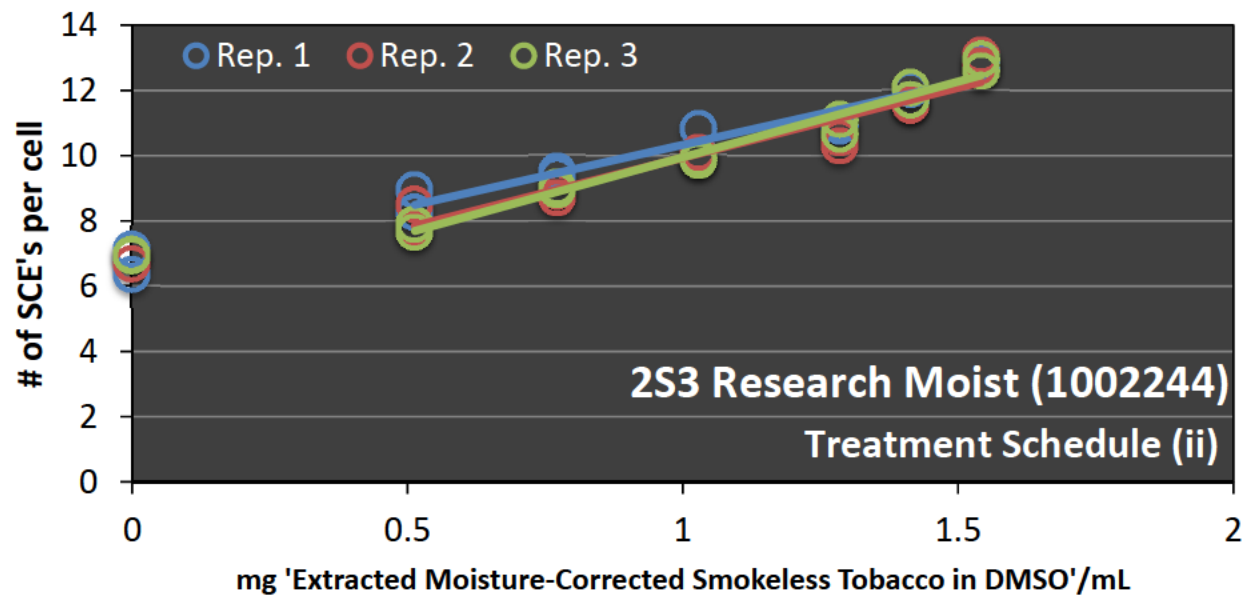
Schedule (ii)			
Sample Description	LOG[Slope]		homogenous Groupings
	Mean	Std. Err.	
Fresh Strips	0.231	0.015	X
Ariva Wintergreen	0.259	0.014	XX
Mellow Sticks	0.265	0.032	XX
Fresh Orbs	0.288	0.019	XX
Camel SNUS Frost	0.362	0.015	X
Copenhagen Long Cut	0.501	0.018	X
2S3	0.625	0.026	X

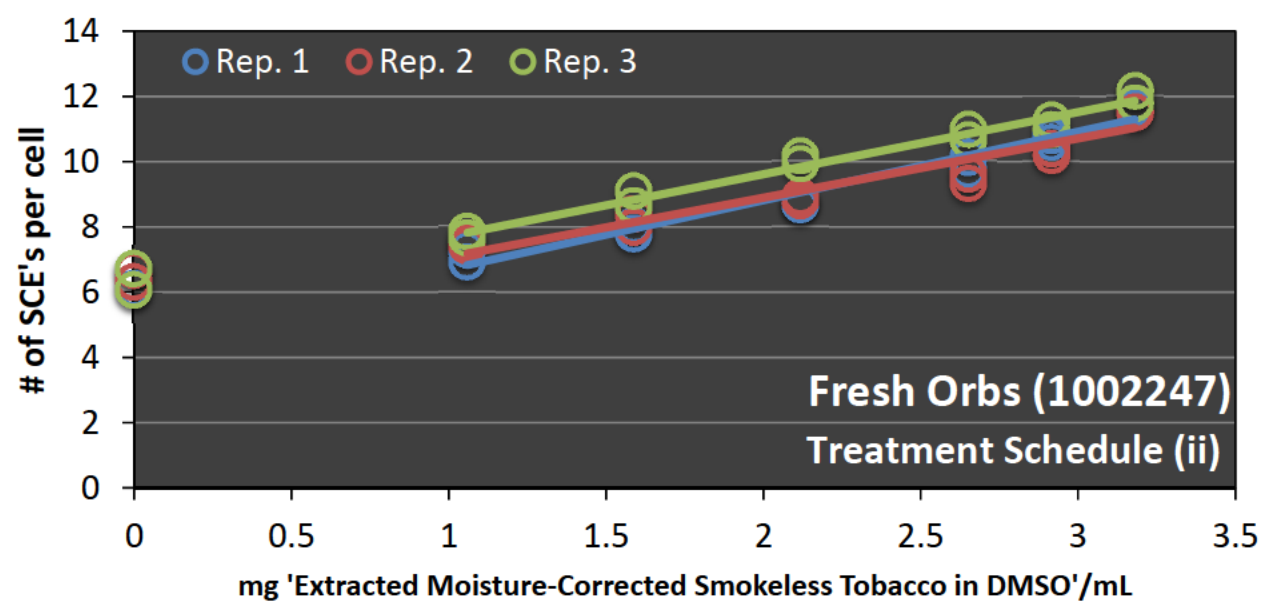


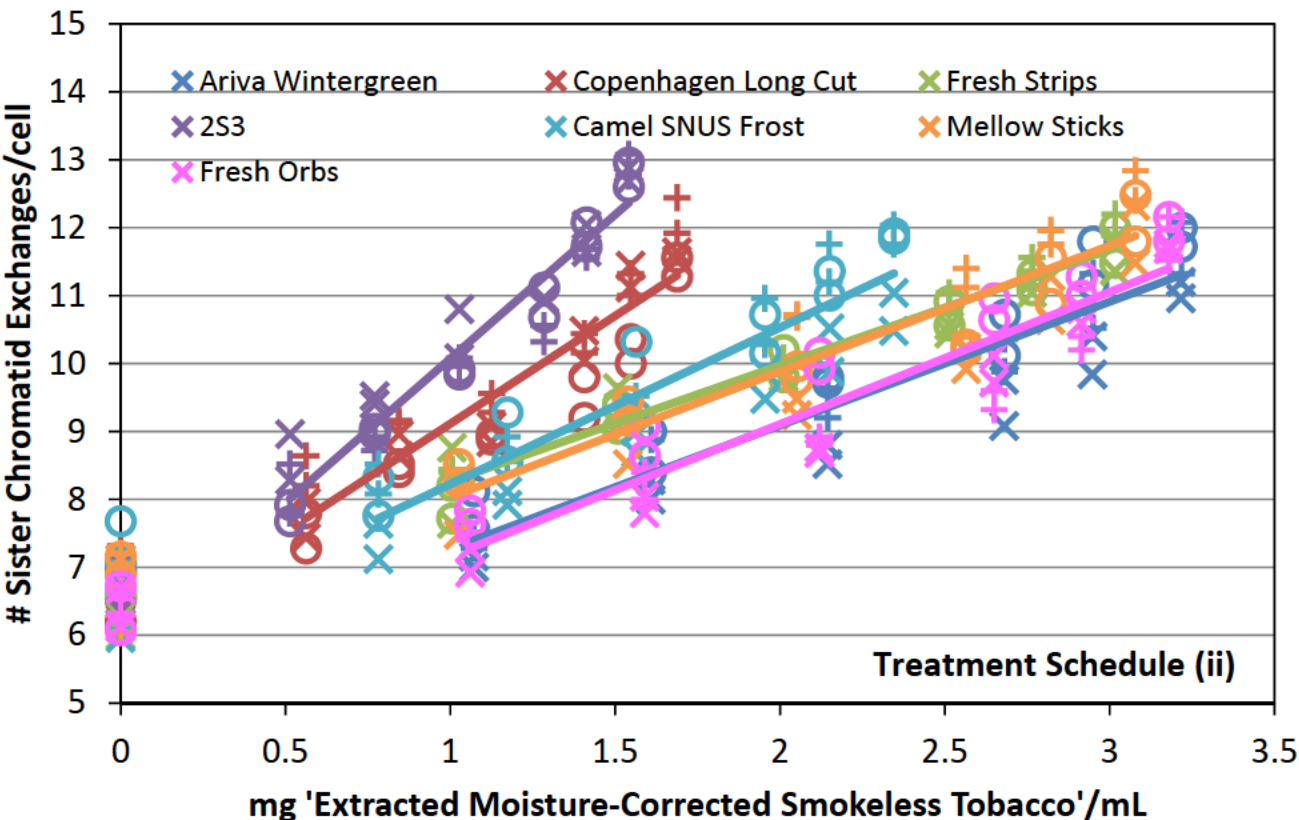
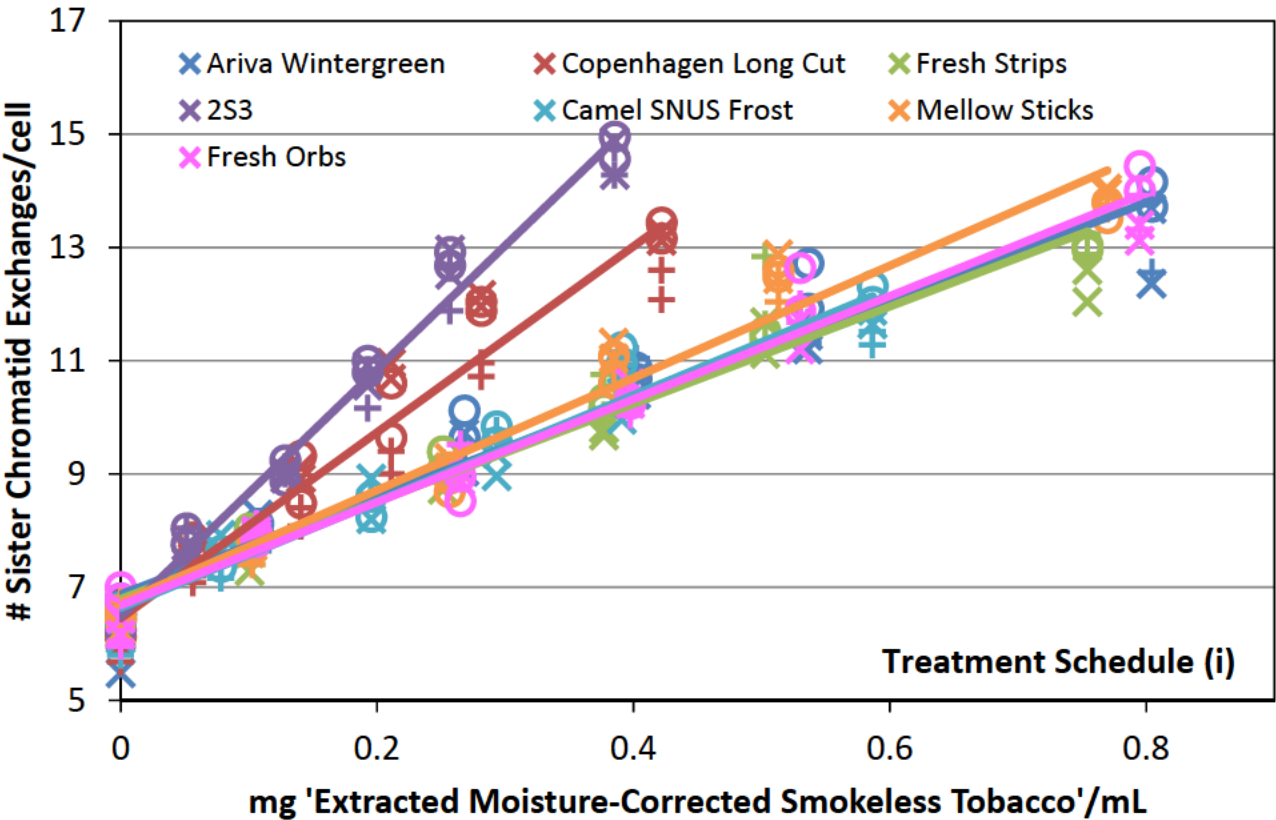














**Slope Analysis of the Linear Portion of the Dose-Response Curve**  
**[Number of Sister Chromatid Exchanges per Cell / ( $\mu\text{g}$  'Nicotine in Extracted Smokeless Tobacco 'mL)]**

			(Number of SCE's/Cell) / (µg 'nicotine in extracted smokeless tobacco'/mL)													
Treatment Schedule	Sample ID	Sample Description	Replicate 1			Replicate 2			Replicate 3			Statistics for Replicate			T-test Analysis	
			Dose Range	slope	LOG	Dose Range	slope	LOG	Dose Range	slope	LOG	LOG[Slope] Estimates			(H <sub>0</sub> : mean[Slope] = 0)	
			(µg 'NIC'/mL)		[slope]	(µg 'NIC'/mL)		[slope]	(µg 'NIC'/mL)		[slope]	Mean	Std. Err.	95% C.I.	p-value	significance
Schedule (i)	1002241	Ariva Wintergreen	0 - 5.14	1.31	0.117	0 - 5.21	1.32	0.119	0 - 5.12	1.42	0.154	0.130	0.012	0.079 to 0.181	0.001	significant
Schedule (i)	1002242	Copenhagen Long Cut	0 - 11.1	0.643	-0.192	0 - 10.7	0.611	-0.214	0 - 10.8	0.658	-0.181	-0.196	0.010	-0.237 to -0.154	0.000	significant
Schedule (i)	1002243	Fresh Strips	0 - 2.14	2.91	0.464	0 - 2.13	3.25	0.511	0 - 2.11	3.01	0.478	0.485	0.014	0.424 to 0.545	0.001	significant
Schedule (i)	1002244	2S3	0 - 10.6	0.810	-0.091	0 - 10.9	0.751	-0.124	0 - 11.3	0.751	-0.124	-0.113	0.011	-0.16 to -0.066	0.001	significant
Schedule (i)	1002245	Camel SNUS Frost	0 - 9.19	0.573	-0.242	0 - 8.54	0.632	-0.200	0 - 8.68	0.675	-0.170	-0.204	0.021	-0.293 to -0.115	0.002	significant
Schedule (i)	1002246	Mellow Sticks	0 - 2.19	3.62	0.559	0 - 2	3.72	0.570	0 - 4.58	1.64	0.215	0.448	0.117	-0.053 to 0.95	0.048	significant
Schedule (i)	1002247	Fresh Orbs	0 - 2.12	3.22	0.507	0 - 2.47	2.98	0.474	0 - 1.68	4.51	0.654	0.545	0.055	0.308 to 0.782	0.017	significant
Schedule (ii)	1002241	Ariva Wintergreen	6.85 - 20.6	0.266	-0.575	6.94 - 20.8	0.290	-0.537	6.83 - 20.5	0.295	-0.530	-0.547	0.014	-0.607 to -0.488	0.001	significant
Schedule (ii)	1002242	Copenhagen Long Cut	14.9 - 44.6	0.130	-0.885	14.3 - 42.8	0.121	-0.917	14.4 - 43.1	0.118	-0.928	-0.910	0.013	-0.965 to -0.854	0.001	significant
Schedule (ii)	1002243	Fresh Strips	2.85 - 8.55	0.561	-0.251	2.83 - 8.5	0.616	-0.210	2.82 - 8.45	0.638	-0.195	-0.219	0.017	-0.291 to -0.147	0.001	significant
Schedule (ii)	1002244	2S3	14.2 - 42.5	0.137	-0.863	14.5 - 43.6	0.152	-0.819	15 - 45	0.159	-0.800	-0.827	0.019	-0.907 to -0.747	0.002	significant
Schedule (ii)	1002245	Camel SNUS Frost	12.3 - 36.8	0.137	-0.862	11.4 - 34.2	0.166	-0.780	11.6 - 34.7	0.159	-0.799	-0.814	0.025	-0.92 to -0.708	0.003	significant
Schedule (ii)	1002246	Mellow Sticks	2.92 - 8.76	0.632	-0.199	2.67 - 8.01	0.812	-0.091	6.1 - 18.3	0.276	-0.559	-0.283	0.142	-0.892 to 0.326	0.068	not significant
Schedule (ii)	1002247	Fresh Orbs	2.82 - 8.46	0.792	-0.101	3.29 - 9.87	0.586	-0.232	2.23 - 6.7	0.904	-0.044	-0.126	0.056	-0.366 to 0.114	0.015	significant

**One-Way ANOVA of Mean 'Nicotine in Extracted Smokeless Tobacco' LOG[Slope] Estimates Among Test Samples**

**Schedule (i)**

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
Among Samples	2.013	6	0.3356	44.49	0.000
Within Samples	0.106	14	0.0075		
Total (Corr.)	2.119	20			

**Schedule (ii)**

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
Among Samples	1.903	6	0.3172	29.91	0.000
Within Samples	0.1485	14	0.0106		
Total (Corr.)	2.052	20			

One-way ANOVA analysis indicates significant differences (at  $\alpha = 0.05$ ) among mean log-transformed 'Nicotine in Extracted Smokeless Tobacco' specific activity slope estimates for test samples under Treatment Schedules (i) and (ii) .

**Ratio (Max ÷ Min) of Standard Deviations of log-transformed 'Nicotine in Extracted Smokeless Tobacco' Slope Estimates and Corresponding Method of Comparison**

Treatment Schedule	Std. Dev. Ratio (Max ÷ Min)	Method of Comparison
Schedule (i)	12.1	ANOVA (equal variance)
Schedule (ii)	11.0	ANOVA (equal variance)

**ANOVA-Based Comparisons of Average 'Nicotine in Extracted Smokeless Tobacco'  
LOG[Slope] for Contrasts of Interest using Bonferroni-adjusted p-values**

ANOVA-Based Comparison	Schedule (i)			Schedule (ii)		
	f-ratio	p-value	significance at $\alpha = 0.05$	f-ratio	p-value	significance at $\alpha = 0.05$
Ariva Wintergreen vs. Copenhagen Long Cut	21.12	0.0004	<b>significant</b>	18.59	0.0007	<b>significant</b>
Ariva Wintergreen vs. Fresh Strips	24.97	0.0002	<b>significant</b>	15.24	0.0016	<b>significant</b>
Ariva Wintergreen vs. 2S3	11.78	0.0040	not significant	11.07	0.0050	not significant
Ariva Wintergreen vs. Camel SNUS Frost	22.19	0.0003	<b>significant</b>	10.04	0.0068	not significant
Ariva Wintergreen vs. Mellow Sticks	20.12	0.0005	<b>significant</b>	9.90	0.0072	not significant
Ariva Wintergreen vs. Fresh Orbs	34.25	0.0000	<b>significant</b>	25.12	0.0002	<b>significant</b>
Copenhagen Long Cut vs. Fresh Strips	92.01	0.0000	<b>significant</b>	67.50	0.0000	<b>significant</b>
Copenhagen Long Cut vs. 2S3	1.35	0.2641	not significant	0.97	0.3414	not significant
Copenhagen Long Cut vs. Camel SNUS Frost	0.01	0.9097	not significant	1.31	0.2723	not significant
Copenhagen Long Cut vs. Mellow Sticks	82.47	0.0000	<b>significant</b>	55.62	0.0000	<b>significant</b>
Copenhagen Long Cut vs. Fresh Orbs	109.15	0.0000	<b>significant</b>	86.94	0.0000	<b>significant</b>
Fresh Strips vs. 2S3	71.05	0.0000	<b>significant</b>	52.29	0.0000	<b>significant</b>
Fresh Strips vs. Camel SNUS Frost	94.24	0.0000	<b>significant</b>	50.03	0.0000	<b>significant</b>
Fresh Strips vs. Mellow Sticks	0.26	0.6171	not significant	0.58	0.4608	not significant
Fresh Strips vs. Fresh Orbs	0.73	0.4068	not significant	1.23	0.2865	not significant
2S3 vs. Camel SNUS Frost	1.64	0.2217	not significant	0.02	0.8767	not significant
2S3 vs. Mellow Sticks	62.69	0.0000	<b>significant</b>	41.90	0.0000	<b>significant</b>
2S3 vs. Fresh Orbs	86.20	0.0000	<b>significant</b>	69.54	0.0000	<b>significant</b>
Camel SNUS Frost vs. Mellow Sticks	84.58	0.0000	<b>significant</b>	39.88	0.0000	<b>significant</b>
Camel SNUS Frost vs. Fresh Orbs	111.58	0.0000	<b>significant</b>	66.93	0.0000	<b>significant</b>
Mellow Sticks vs. Fresh Orbs	1.87	0.1933	not significant	3.48	0.0831	not significant

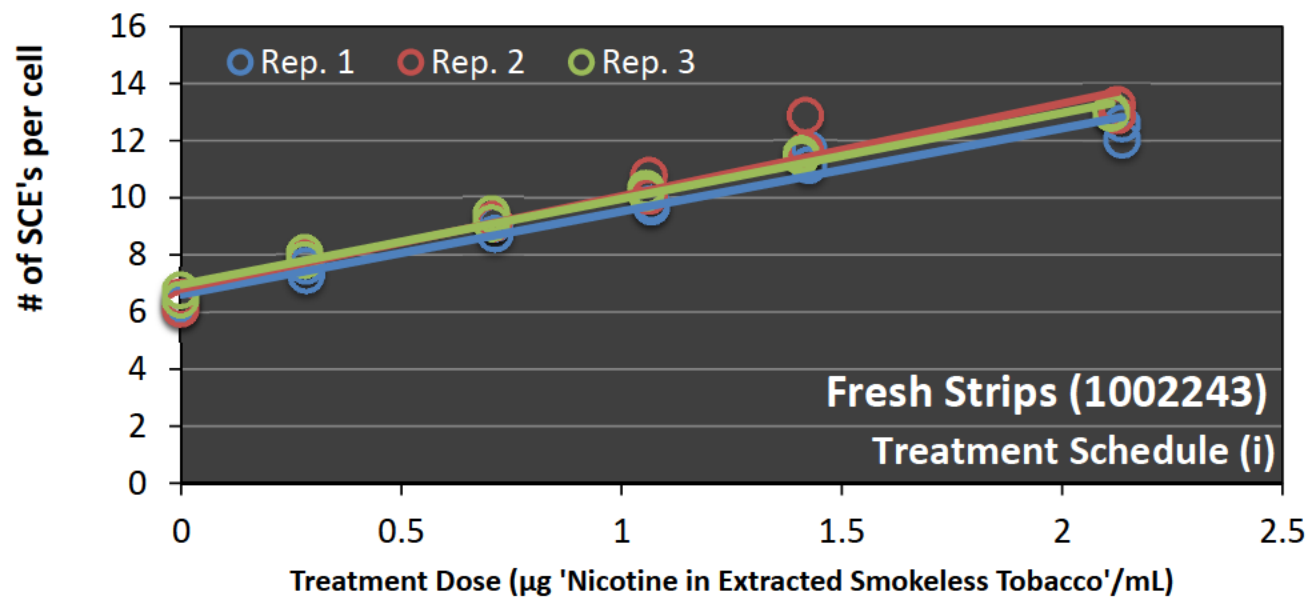
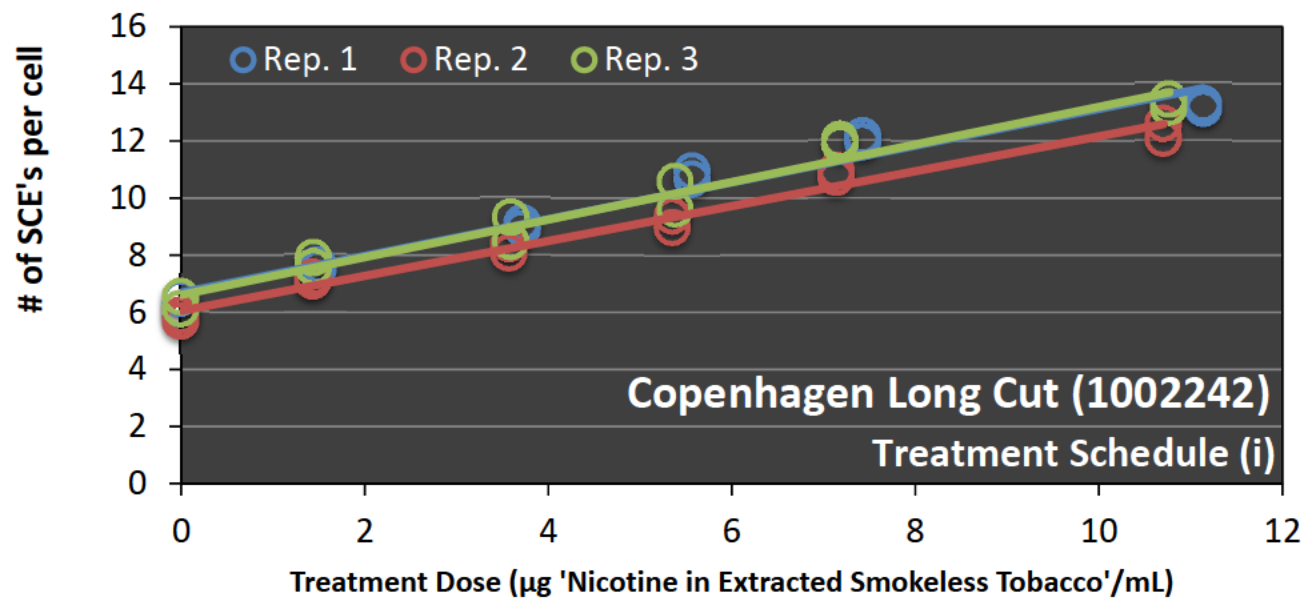
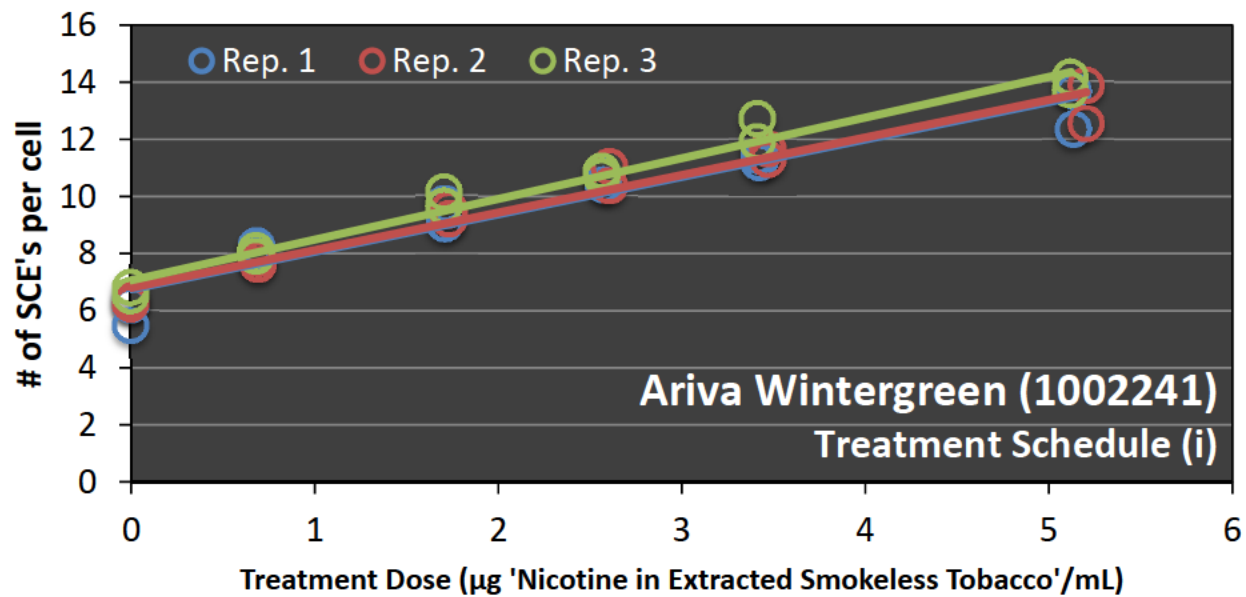
ANOVA-based comparison p-values less than the Bonferroni-adjusted  $\alpha = 0.05$  indicate that significant differences in mean log-transformed 'nicotine in extracted smokeless tobacco' slope were as follows under treatment schedules (i) and (ii):

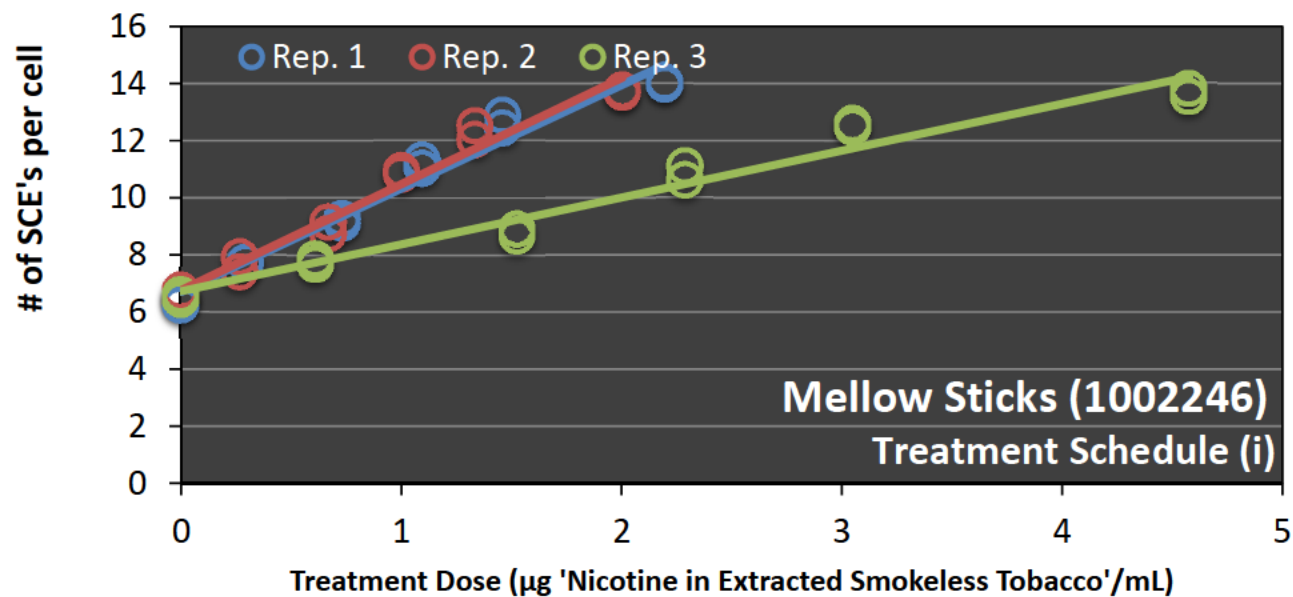
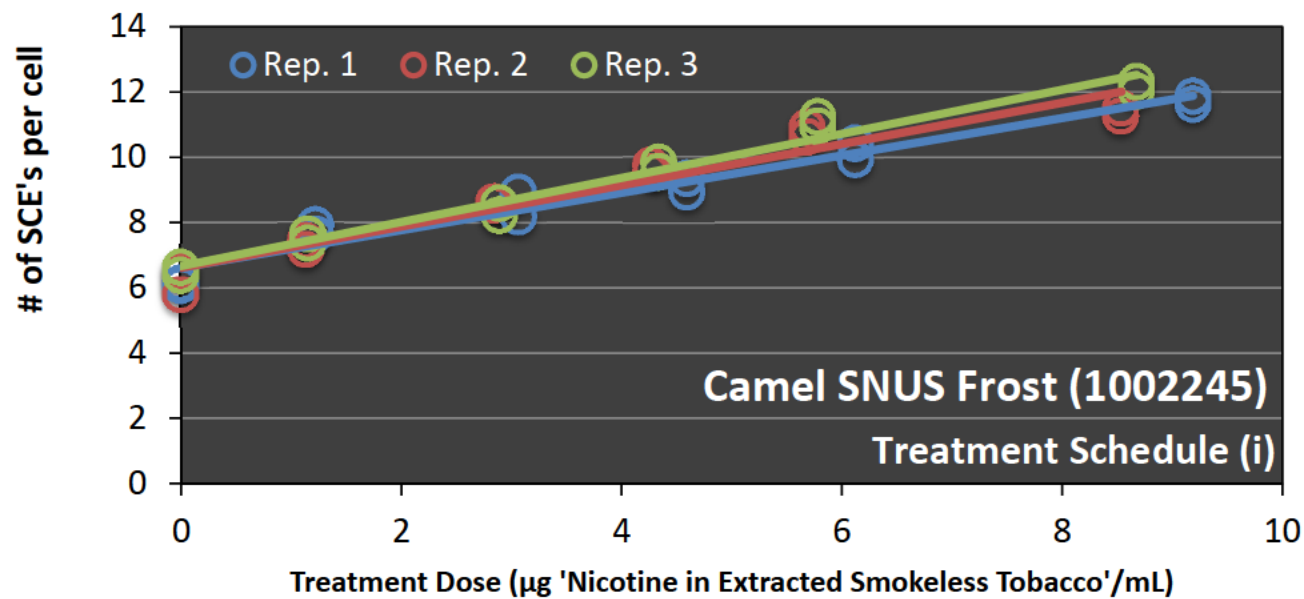
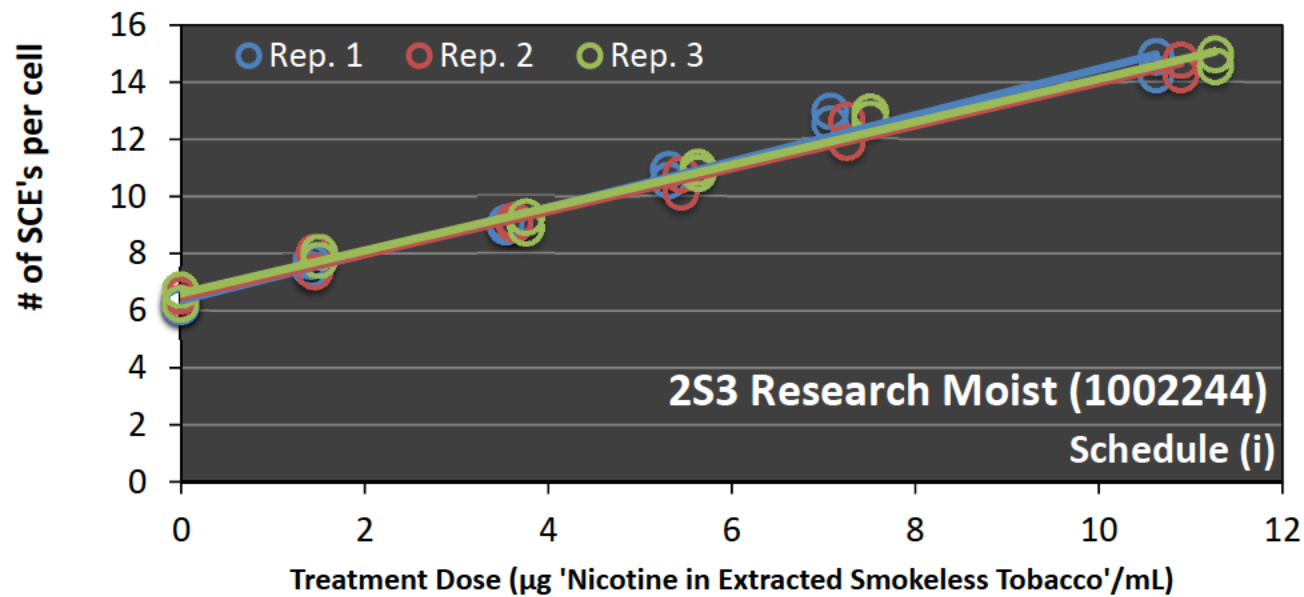
**Schedule (i)**

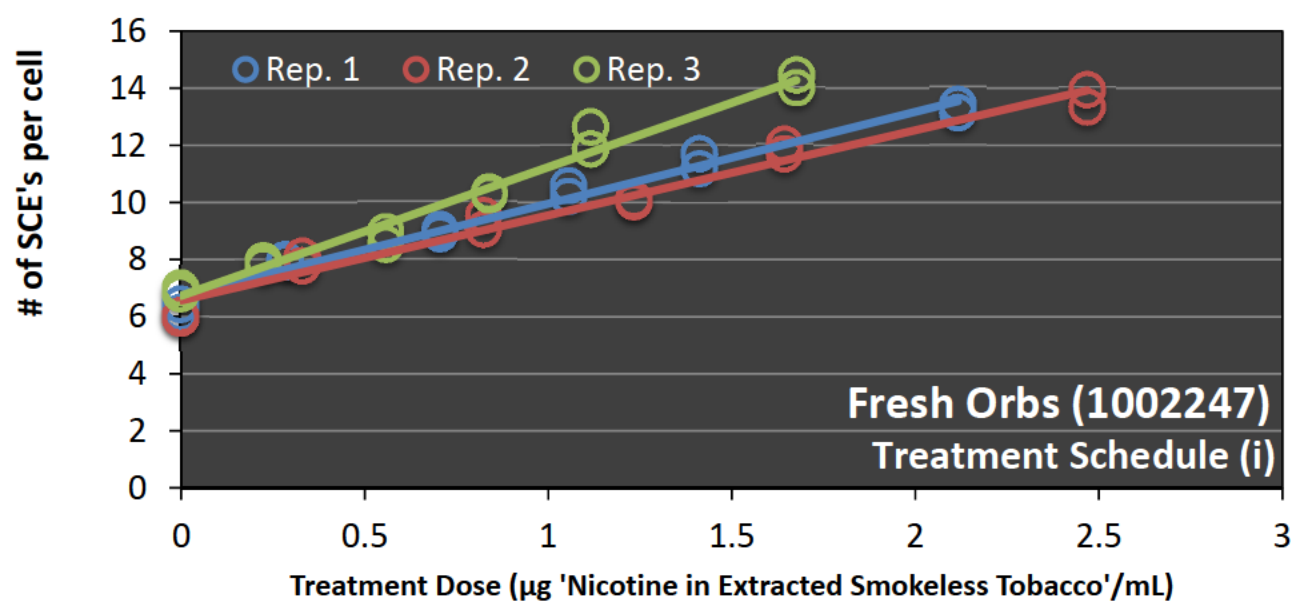
Sample Description	LOG[Slope]		Homogenous Groupings
	Mean	Std. Err.	
Camel SNUS Frost	-0.204	0.021	<b>X</b>
Copenhagen Long Cut	-0.196	0.010	<b>X</b>
2S3	-0.113	0.011	<b>XX</b>
Ariva Wintergreen	0.130	0.012	<b>X</b>
Mellow Sticks	0.448	0.117	<b>X</b>
Fresh Strips	0.485	0.014	<b>X</b>
Fresh Orbs	0.545	0.055	<b>X</b>

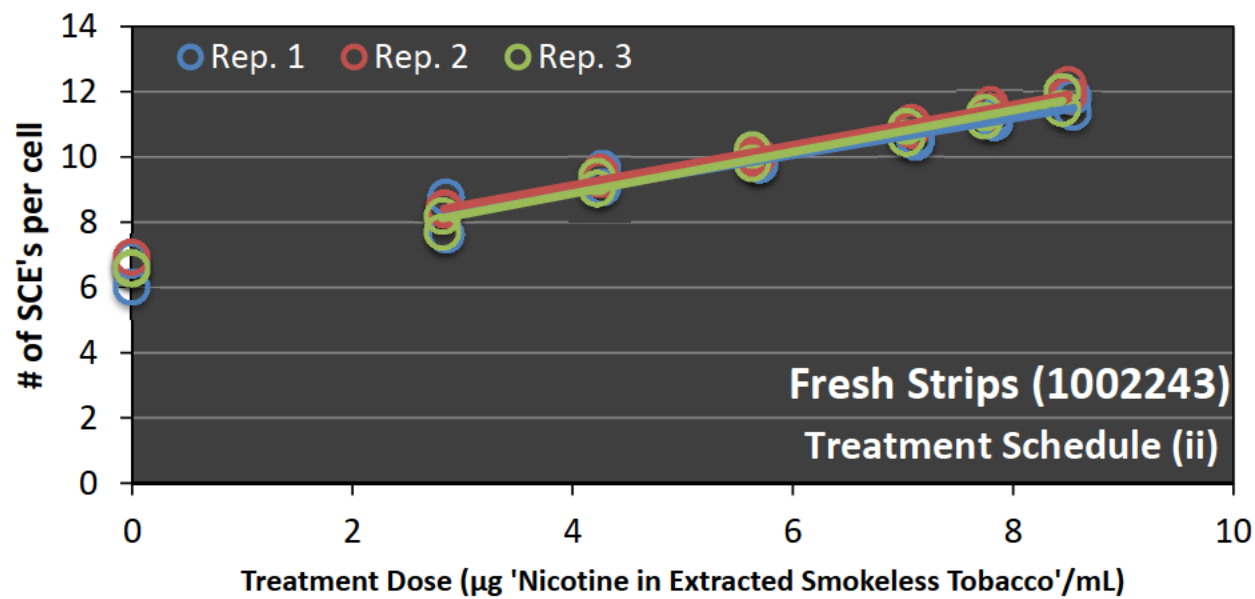
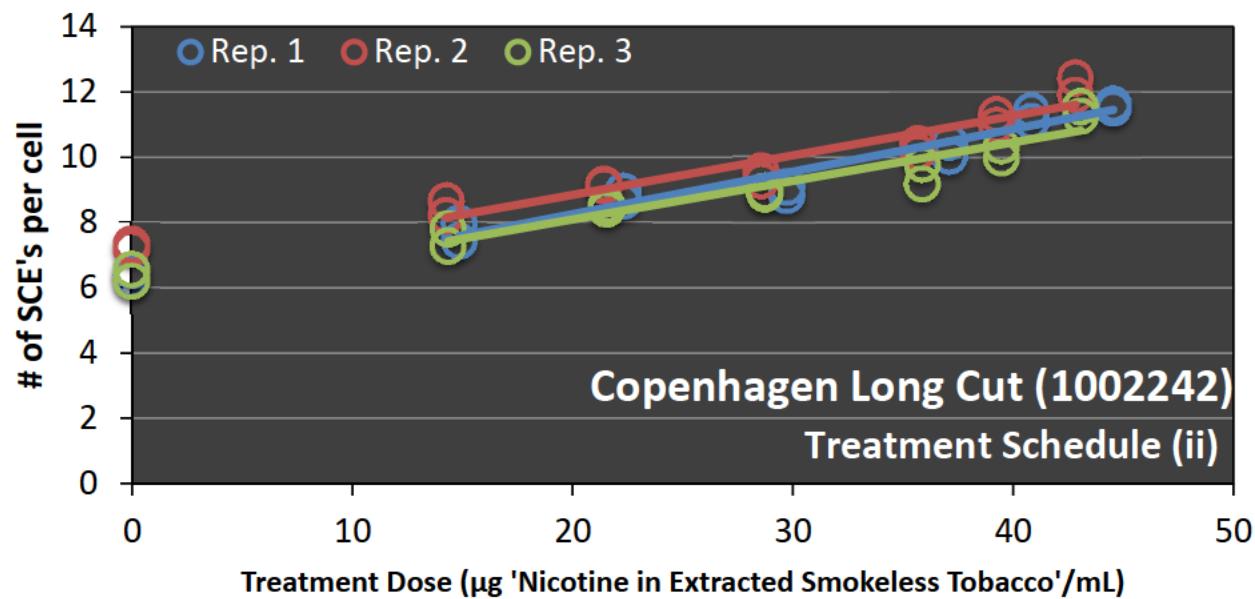
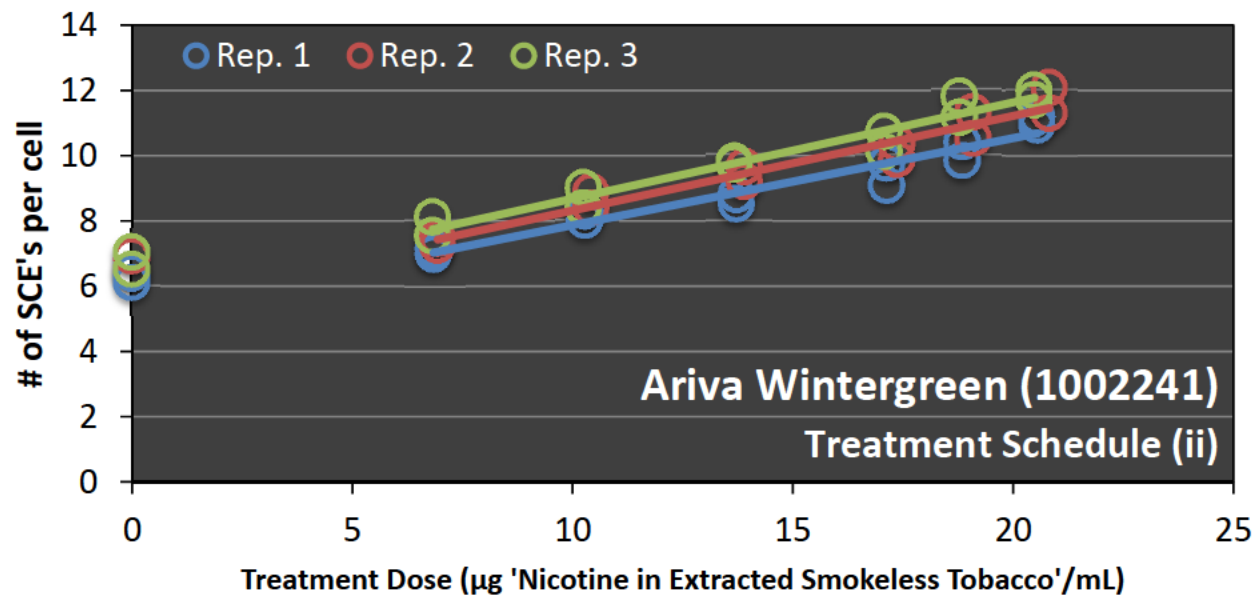
**Schedule (ii)**

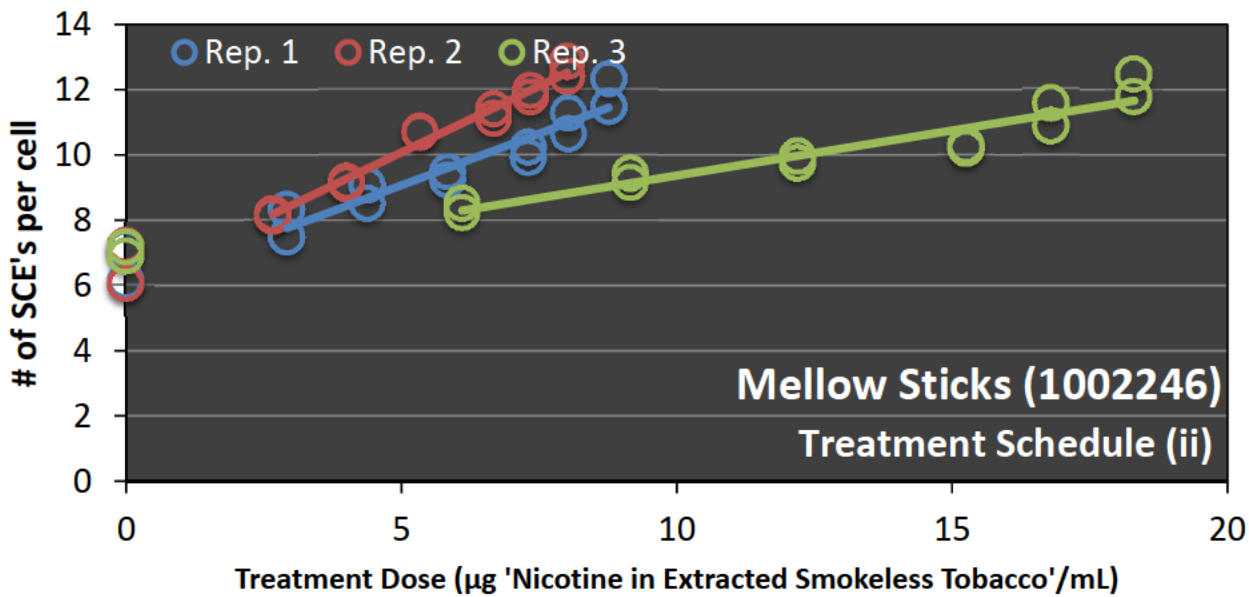
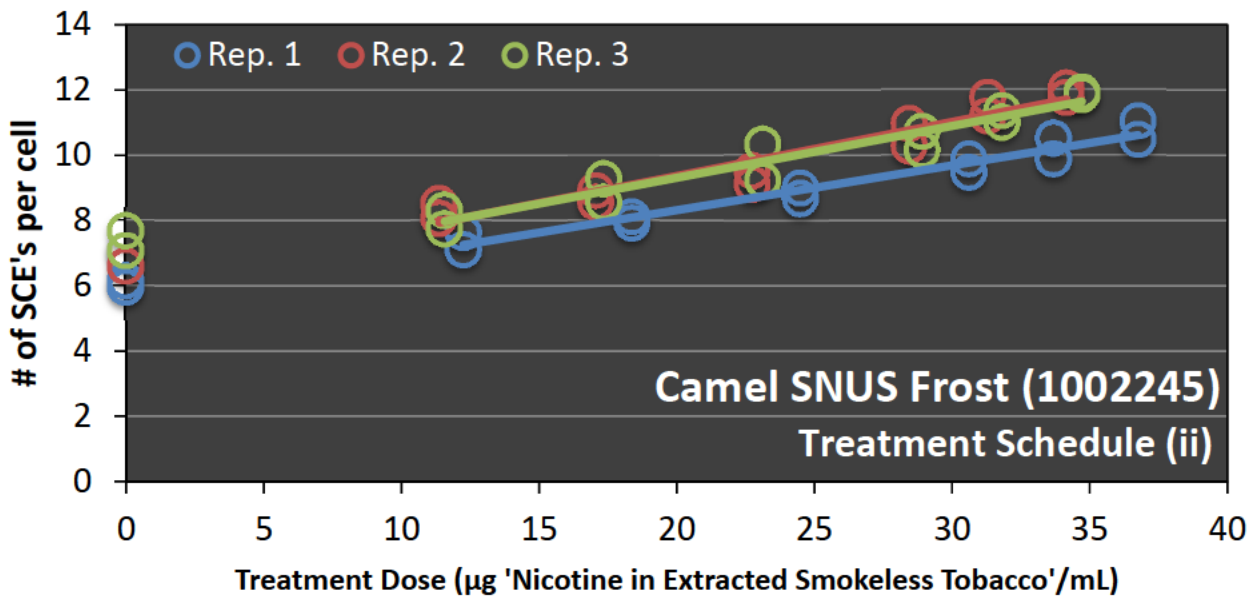
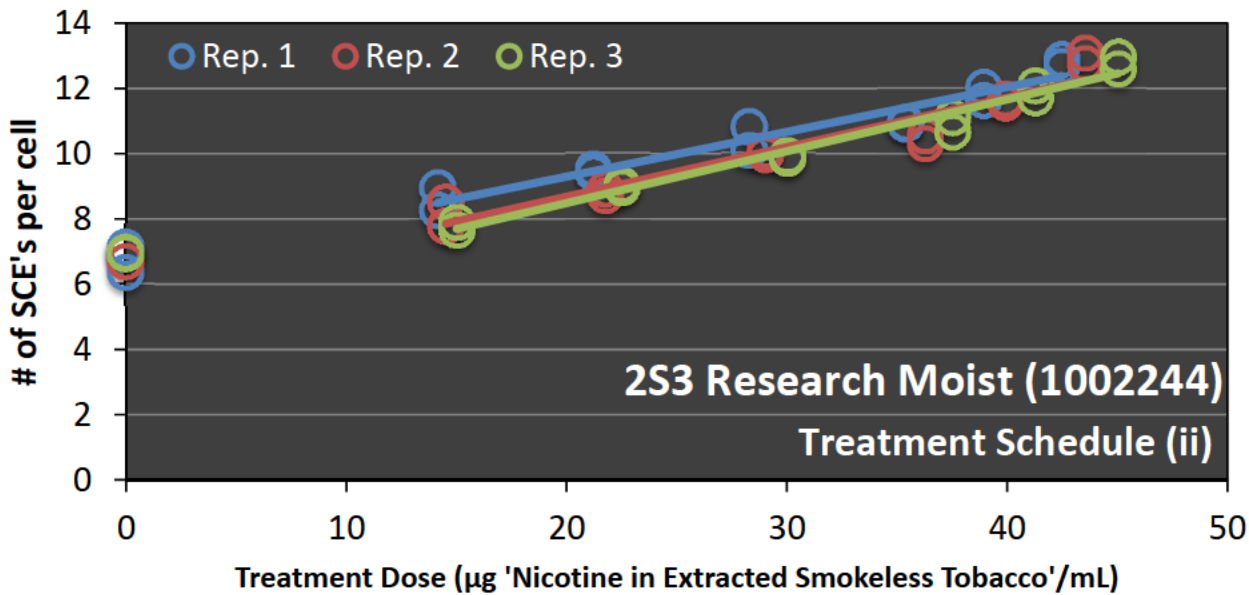
Sample Description	LOG[Slope]		Homogenous Groupings
	Mean	Std. Err.	
Copenhagen Long Cut	-0.910	0.013	<b>X</b>
2S3	-0.827	0.019	<b>XX</b>
Camel SNUS Frost	-0.814	0.025	<b>XX</b>
Ariva Wintergreen	-0.547	0.014	<b>XX</b>
Mellow Sticks	-0.283	0.142	<b>XX</b>
Fresh Strips	-0.219	0.017	<b>X</b>
Fresh Orbs	-0.126	0.056	<b>X</b>

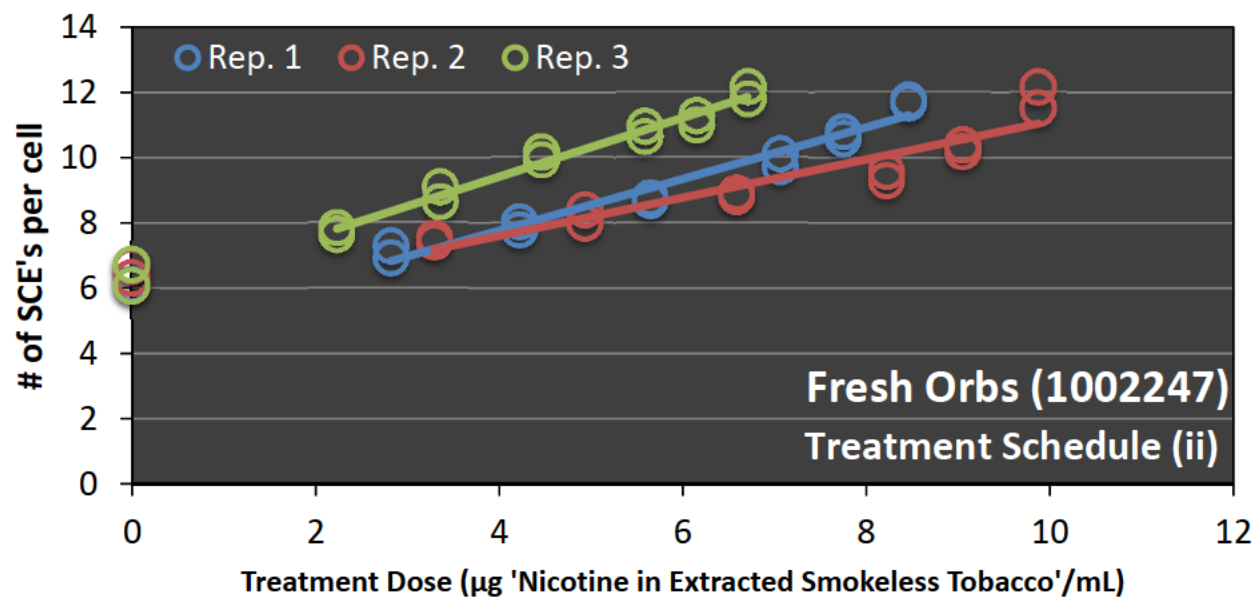


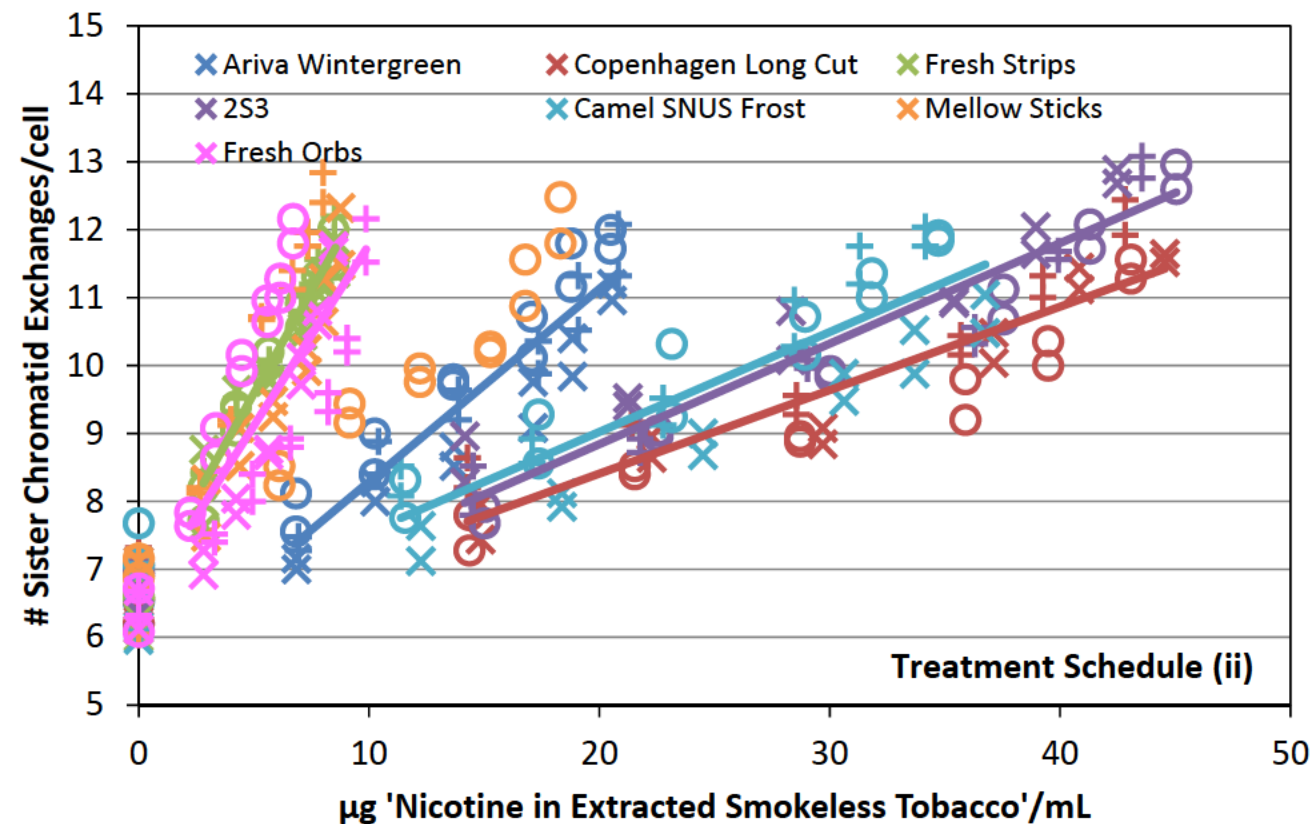
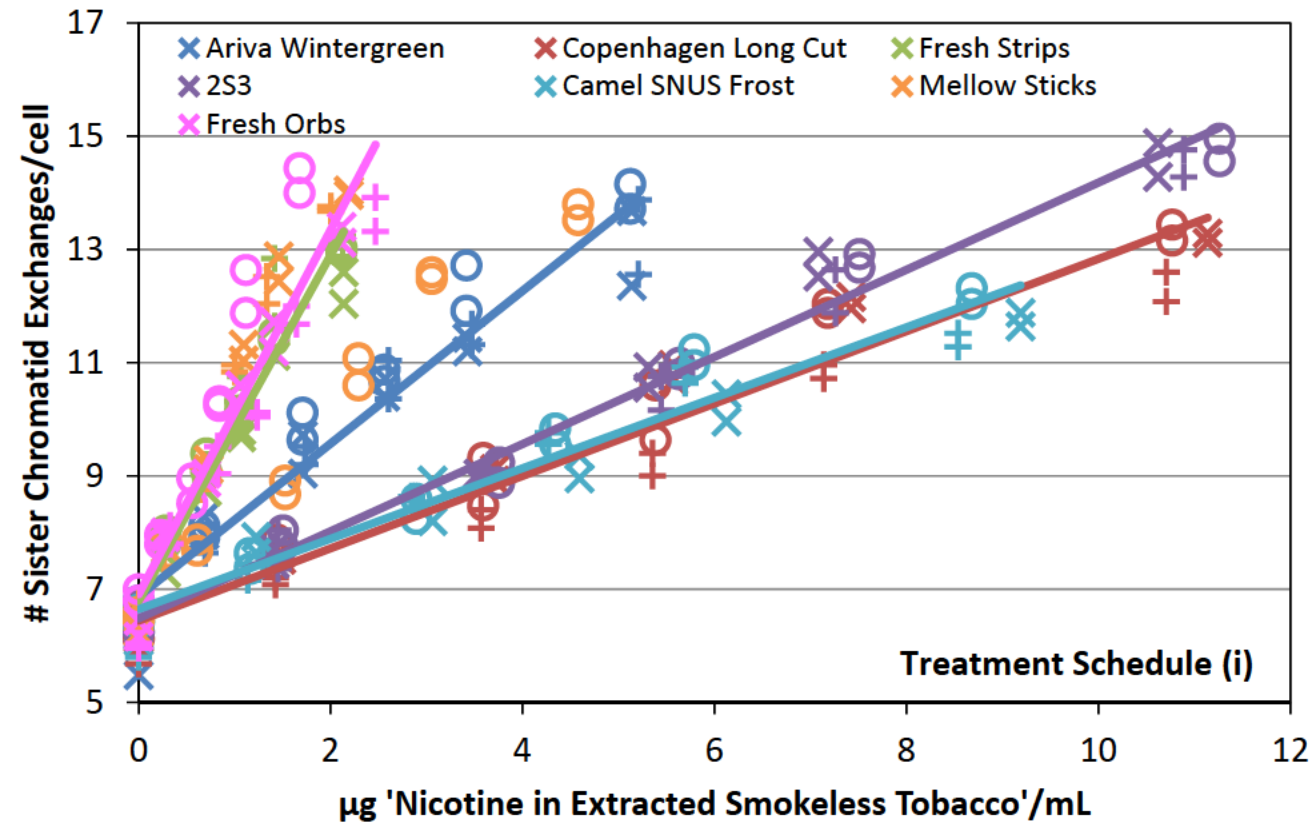














Nicotine Extraction Efficiency Data for *In Vitro* Sister Chromatid Exchange Assay Analysis

Set-Run Number	Sample ID	Sample Description	Replicate Number	Extraction Date	mg Tobacco per mL	Nicotine in Extraction Solution		Nicotine <sup>1</sup> (mg/g)	Nicotine Extraction Efficiency (%)
						(mg/mL)	(mg/g)		
1-4	1002241	Ariva	1	02-Feb-10	111.124	0.685	6.16	5.39	114
2-1		Wintergreen	2	09-Feb-10	111.187	0.694	6.24		116
3-2			3	10-Feb-10	111.196	0.683	6.14		114
1-3	1002242	Copenhagen	1	02-Feb-10	111.111	1.49	13.4	12.7	105
2-2		Long Cut	2	09-Feb-10	111.138	1.43	12.8		101
3-1			3	10-Feb-10	111.133	1.44	12.9		102
1-2	1002243	Fresh	1	02-Feb-10	111.120	0.285	2.56	2.23	115
2-3		Strips	2	09-Feb-10	111.124	0.283	2.55		114
3-3			3	10-Feb-10	111.147	0.282	2.53		114
4-1	1002244	2S3	1	16-Feb-10	111.182	1.42	12.7	13.0	98
5-2		2S3	2	17-Feb-10	111.147	1.45	13.1		100
6-3			3	18-Feb-10	111.182	1.50	13.5		104
4-3	1002245	Camel SNUS	1	16-Feb-10	111.169	1.23	11.0	10.7	103
5-3		Frost	2	17-Feb-10	111.129	1.14	10.2		95.5
6-2			3	18-Feb-10	111.178	1.16	10.4		97.0
4-2	1002246	Mellow	1	16-Feb-10	111.156	0.292	2.63	4.39	59.8
5-1		Sticks	2	17-Feb-10	111.187	0.267	2.40		54.6
6-1			3	18-Feb-10	111.191	0.610	5.49		125
7-1	1002247	Fresh	1	22-Feb-10	111.138	0.282	2.54	2.29	111
8-1		Orbs	2	23-Feb-10	111.164	0.329	2.96		129
9-1			3	24-Feb-10	111.164	0.223	2.01		88

1. Average constituent nicotine contents of the tobacco samples were determined by Labstat and are expressed on a mg/g 'as received' basis.

Low Observed Nicotine Extraction Efficiency

