

Experiment Number: A79276

Test Type: Genetic Toxicology - Bacterial  
Mutagenicity

**G06: Ames Summary Data**

Test Compound: Riboflavin

CAS Number: 83-88-5

Date Report Requested: 09/17/2018

Time Report Requested: 23:42:49

**NTP Study Number:**

A79276

**Study Result:**

Negative

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Mutagenicity

## G06: Ames Summary Data

Test Compound: Riboflavin

CAS Number: 83-88-5

Date Report Requested: 09/17/2018

Time Report Requested: 23:42:49

## Strain: TA100

Dose (ug/Plate)	Without S9	Without S9	With 10% Rat S9	With 30% Rat S9	With 10% Hamster S9
Vehicle Control <sup>1</sup>	154 ± 7.5	106 ± 7.2	111 ± 7.2	161 ± 12.2	103 ± 2.1
100.0	139 ± 13.3	119 ± 2.6	110 ± 2.3	155 ± 4.6	115 ± 4.6
333.0	154 ± 6.4	111 ± 7.5	111 ± 1.2	142 ± 7.0	123 ± 10.1
1000.0	151 ± 8.2	122 ± 6.7	119 ± 11.8	117 ± 3.5	111 ± 5.6
3333.0	122 ± 8.7	123 ± 5.5	118 ± 7.5	131 ± 2.4	113 ± 12.5
10000.0	123 ± 5.9	115 ± 6.7	137 ± 4.3	105 ± 7.6	124 ± 3.7
Trial Summary	Negative	Negative	Negative	Negative	Negative
Positive Control <sup>2</sup>					832 ± 11.9
Positive Control <sup>3</sup>			447 ± 13.5		
Positive Control <sup>4</sup>	847 ± 33.6	680 ± 45.4			
Positive Control <sup>5</sup>				618 ± 11.4	

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Time Report Requested: 23:42:49

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Strain: TA100

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Dose (ug/Plate)	With 30% Hamster S9
Vehicle Control <sup>1</sup>	126 ± 13.0
100.0	122 ± 4.9
333.0	123 ± 5.0
1000.0	117 ± 4.4
3333.0	131 ± 3.5
10000.0	110 ± 9.0
Trial Summary	Negative
Positive Control <sup>2</sup>	
Positive Control <sup>3</sup>	651 ± 27.8
Positive Control <sup>4</sup>	
Positive Control <sup>5</sup>	

Experiment Number: A79276

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Date Report Requested: 09/17/2018

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Test Compound: Riboflavin

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CAS Number: 83-88-5

Strain: TA1535

Dose (ug/Plate)	Without S9	Without S9	Without S9	With 10% Rat S9	With 30% Rat S9
Vehicle Control <sup>1</sup>	13 ± 2.3	9 ± 1.5	11 ± 2.6	9 ± 2.0	10 ± 1.2
100.0	8 ± 1.8	7 ± 0.7	10 ± 1.3	9 ± 0.9	9 ± 1.8
333.0	12 ± 0.7	6 ± 1.5	9 ± 2.0	8 ± 1.5	10 ± 0.9
1000.0	9 ± 0.9	8 ± 1.2	11 ± 2.6	8 ± 1.2	12 ± 1.0
3333.0	7 ± 1.2	8 ± 1.5	8 ± 0.9	10 ± 2.6	8 ± 0.7
10000.0	10 ± 0.9	8 ± 1.2	9 ± 3.4	11 ± 0.7	5 ± 1.2
Trial Summary	Negative	Negative	Negative	Negative	Negative
Positive Control <sup>3</sup>					
Positive Control <sup>4</sup>	877 ± 17.5	927 ± 25.2	986 ± 18.3		
Positive Control <sup>5</sup>				144 ± 5.9	
Positive Control <sup>6</sup>					86 ± 7.3

Experiment Number: A79276  
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G06: Ames Summary Data  
Test Compound: Riboflavin  
CAS Number: 83-88-5

Date Report Requested: 09/17/2018  
Time Report Requested: 23:42:49

Strain: TA1535

Dose (ug/Plate)	With 30% Rat S9	With 10% Hamster S9	With 30% Hamster S9	With 30% Hamster S9
Vehicle Control <sup>1</sup>	6 ± 0.9	9 ± 2.3	13 ± 2.2	9 ± 2.0
100.0	9 ± 1.2	8 ± 1.9	11 ± 1.5	8 ± 0.9
333.0	8 ± 1.0	7 ± 0.6	9 ± 1.9	10 ± 2.6
1000.0	11 ± 0.3	9 ± 0.3	6 ± 1.0	7 ± 0.6
3333.0	9 ± 2.3	7 ± 0.9	7 ± 0.9	9 ± 1.2
10000.0	8 ± 0.9	9 ± 1.5	7 ± 2.1	7 ± 1.0
Trial Summary	Negative	Negative	Negative	Negative
Positive Control <sup>3</sup>		119 ± 8.9		
Positive Control <sup>4</sup>				
Positive Control <sup>5</sup>			105 ± 6.2	71 ± 3.8
Positive Control <sup>6</sup>	96 ± 3.0			

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Date Report Requested: 09/17/2018  
Time Report Requested: 23:42:49

Strain: TA1537

Dose (ug/Plate)	Without S9	With 10% Hamster S9	With 30% Hamster S9
Vehicle Control <sup>1</sup>	8 ± 0.3	9 ± 0.9	6 ± 1.9
333.0	16 ± 0.3	8 ± 1.2	7 ± 1.8
666.0	10 ± 2.0	9 ± 0.6	5 ± 0.9
1000.0	9 ± 3.5	9 ± 0.9	11 ± 0.3
1666.0	9 ± 1.9	7 ± 0.9	5 ± 0.9
3333.0	10 ± 1.7	7 ± 0.7	7 ± 0.9
6666.0	12 ± 1.3	7 ± 0.9	7 ± 1.5
10000.0	10 ± 1.3	9 ± 3.4	8 ± 2.0
Trial Summary	Negative	Negative	Negative
Positive Control <sup>3</sup>		80 ± 3.5	
Positive Control <sup>5</sup>			60 ± 2.6
Positive Control <sup>7</sup>	218 ± 16.0		

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Date Report Requested: 09/17/2018  
 Time Report Requested: 23:42:49

Strain: TA97

Dose (ug/Plate)	Without S9	Without S9	Without S9	With 10% Rat S9	With 30% Rat S9
Vehicle Control <sup>1</sup>	131 ± 8.0	145 ± 11.3	103 ± 5.4	140 ± 7.6	184 ± 5.4
100.0	125 ± 2.3		105 ± 13.8	132 ± 3.0	173 ± 8.6
333.0	108 ± 5.2	139 ± 4.7	112 ± 6.4	117 ± 5.3	128 ± 6.1
666.0		140 ± 3.2			
1000.0	130 ± 6.3	131 ± 8.3	109 ± 10.1	106 ± 10.0	128 ± 7.7
1666.0		159 ± 3.8			
3333.0	155 ± 5.0	168 ± 7.1	133 ± 4.2	129 ± 9.5	137 ± 4.8
6666.0		169 ± 5.3			
10000.0	162 ± 9.1	164 ± 7.0	117 ± 9.0	133 ± 0.6	153 ± 3.0
Trial Summary	Equivocal	Negative	Negative	Negative	Negative
Positive Control <sup>2</sup>					
Positive Control <sup>3</sup>				483 ± 9.5	
Positive Control <sup>5</sup>					637 ± 12.2
Positive Control <sup>7</sup>	570 ± 29.4	544 ± 11.4	433 ± 38.5		

Experiment Number: A79276  
Test Type: Genetic Toxicology - Bacterial  
Mutagenicity

G06: Ames Summary Data  
Test Compound: Riboflavin  
CAS Number: 83-88-5

Date Report Requested: 09/17/2018  
Time Report Requested: 23:42:49

Strain: TA97

Dose (ug/Plate)	With 10% Hamster S9	With 10% Hamster S9	With 30% Hamster S9	With 30% Hamster S9
Vehicle Control <sup>1</sup>	140 ± 1.3	106 ± 12.5	133 ± 10.1	147 ± 2.3
100.0		117 ± 5.8	135 ± 9.0	
333.0	153 ± 5.0	111 ± 5.5	115 ± 11.5	130 ± 0.3
666.0	138 ± 8.4			119 ± 7.5
1000.0	154 ± 3.6	107 ± 1.5	169 ± 7.6	130 ± 7.5
1666.0	160 ± 4.2			112 ± 0.9
3333.0	158 ± 5.9	144 ± 1.2	169 ± 8.2	114 ± 9.3
6666.0	155 ± 1.7			152 ± 1.9
10000.0	162 ± 15.0	126 ± 3.5	172 ± 7.8	152 ± 6.2
Trial Summary	Negative	Negative	Equivocal	Negative
Positive Control <sup>2</sup>	544 ± 26.5	657 ± 22.6		
Positive Control <sup>3</sup>			640 ± 26.1	455 ± 14.7
Positive Control <sup>5</sup>				
Positive Control <sup>7</sup>				



Experiment Number: A79276

**G06: Ames Summary Data**

Date Report Requested: 09/17/2018

Test Type: **Genetic Toxicology - Bacterial Mutagenicity**Test Compound: **Riboflavin**

Time Report Requested: 23:42:49

CAS Number: 83-88-5

**Strain: TA98**

<b>Dose (ug/Plate)</b>	<b>Without S9</b>	<b>Without S9</b>	<b>With 10% Rat S9</b>	<b>With 30% Rat S9</b>	<b>With 10% Hamster S9</b>
Vehicle Control <sup>1</sup>	16 ± 2.3	17 ± 2.0	24 ± 4.3	21 ± 3.0	19 ± 4.6
100.0	18 ± 0.7	27 ± 1.8	17 ± 0.6	18 ± 0.0	28 ± 2.0
333.0	20 ± 2.3	18 ± 2.0	18 ± 3.3	19 ± 2.4	23 ± 3.5
1000.0	24 ± 4.9	19 ± 0.6	15 ± 3.0	15 ± 3.8	22 ± 3.0
3333.0	17 ± 4.0	21 ± 0.7	25 ± 2.7	20 ± 1.0	23 ± 4.6
10000.0	21 ± 3.1	21 ± 3.1	16 ± 3.8	21 ± 4.7	17 ± 1.2
Trial Summary	Negative	Negative	Negative	Negative	Negative
Positive Control <sup>2</sup>					819 ± 15.3
Positive Control <sup>3</sup>			325 ± 6.7		
Positive Control <sup>8</sup>	339 ± 26.2	490 ± 5.5			
Positive Control <sup>5</sup>				459 ± 9.9	

Experiment Number: A79276  
Test Type: Genetic Toxicology - Bacterial  
Mutagenicity

G06: Ames Summary Data  
Test Compound: Riboflavin  
CAS Number: 83-88-5

Date Report Requested: 09/17/2018  
Time Report Requested: 23:42:49

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Strain: TA98

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Dose (ug/Plate)	With 30% Hamster S9
Vehicle Control <sup>1</sup>	22 ± 1.2
100.0	23 ± 1.5
333.0	29 ± 1.9
1000.0	20 ± 0.3
3333.0	22 ± 2.5
10000.0	26 ± 3.0
Trial Summary	Negative
Positive Control <sup>2</sup>	
Positive Control <sup>3</sup>	514 ± 8.1
Positive Control <sup>8</sup>	
Positive Control <sup>5</sup>	

Experiment Number: A79276

Test Type: Genetic Toxicology - Bacterial  
Mutagenicity

## G06: Ames Summary Data

Test Compound: Riboflavin

CAS Number: 83-88-5

Date Report Requested: 09/17/2018

Time Report Requested: 23:42:49

## Strain: TA102

Dose (ug/Plate)	Without S9	Without S9	With 10% Rat S9	With 30% Rat S9	With 10% Hamster S9
Vehicle Control <sup>1</sup>	212 ± 4.6	252 ± 3.0	342 ± 23.7	346 ± 15.0	376 ± 25.1
100.0	240 ± 17.4	232 ± 7.9	315 ± 42.7	345 ± 1.3	399 ± 21.3
333.0	223 ± 4.7	250 ± 6.2	355 ± 10.5	335 ± 21.3	379 ± 17.5
1000.0	224 ± 13.4	212 ± 8.0	355 ± 19.2	358 ± 22.6	433 ± 11.6
3333.0	252 ± 23.8	222 ± 10.0	387 ± 37.3	356 ± 14.5	387 ± 18.1
10000.0	215 ± 5.3	249 ± 5.8	375 ± 74.2	386 ± 13.3	435 ± 31.5
Trial Summary	Negative	Negative	Negative	Negative	Negative
Positive Control <sup>9</sup>	676 ± 35.0	726 ± 11.0			
Positive Control <sup>6</sup>			748 ± 26.0	587 ± 23.2	847 ± 23.3

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Mutagenicity

G06: Ames Summary Data  
Test Compound: Riboflavin  
CAS Number: 83-88-5

Date Report Requested: 09/17/2018  
Time Report Requested: 23:42:49

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Strain: TA102

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Dose (ug/Plate)	With 30% Hamster S9
Vehicle Control <sup>1</sup>	349 ± 9.3
100.0	362 ± 4.2
333.0	351 ± 28.0
1000.0	391 ± 17.8
3333.0	349 ± 20.2
10000.0	390 ± 18.6
Trial Summary	Negative
Positive Control <sup>9</sup>	
Positive Control <sup>6</sup>	620 ± 34.1

Experiment Number: A79276

Test Type: Genetic Toxicology - Bacterial  
Mutagenicity

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Test Compound: Riboflavin

CAS Number: 83-88-5

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Time Report Requested: 23:42:49

## Strain: TA104

Dose (ug/Plate)	Without S9	Without S9	With 10% Rat S9	With 30% Rat S9	With 10% Hamster S9
Vehicle Control <sup>1</sup>	275 ± 16.4	243 ± 22.9	324 ± 6.1	353 ± 29.4	325 ± 20.8
100.0	305 ± 10.4	227 ± 7.4	342 ± 12.7	384 ± 36.0	356 ± 3.8
333.0	309 ± 41.9	279 ± 4.4	347 ± 25.5	372 ± 8.3	284 ± 39.9
1000.0	316 ± 58.0	219 ± 32.2	364 ± 16.7	373 ± 77.3	382 ± 8.1
3333.0	345 ± 16.4	263 ± 4.2	340 ± 28.3	420 ± 38.1	330 ± 36.7
10000.0	351 ± 1.8	221 ± 15.0	349 ± 22.4	412 ± 26.9	337 ± 19.6
Trial Summary	Negative	Negative	Negative	Negative	Negative
Positive Control <sup>6</sup>			671 ± 13.5	679 ± 4.5	861 ± 11.3
Positive Control <sup>10</sup>	727 ± 9.9	737 ± 15.6			

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Mutagenicity

G06: Ames Summary Data  
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CAS Number: 83-88-5

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Time Report Requested: 23:42:49

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Strain: TA104

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Dose (ug/Plate)	With 30% Hamster S9
Vehicle Control <sup>1</sup>	372 ± 36.7
100.0	317 ± 26.8
333.0	391 ± 41.6
1000.0	343 ± 13.9
3333.0	381 ± 42.9
10000.0	376 ± 50.6
Trial Summary	Negative
Positive Control <sup>6</sup>	724 ± 14.2
Positive Control <sup>10</sup>	

Experiment Number: A79276

Test Type: Genetic Toxicology - Bacterial  
Mutagenicity

G06: Ames Summary Data

Test Compound: Riboflavin

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## LEGEND

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Values given as Mean or Mean  $\pm$  Standard Error Mean

The number of samples = 3, unless samples marked toxic or contaminated were excluded from mean and SEM calculations

CAS Number = Chemical Abstracts Service registry number

1: Vehicle Control: Dimethyl Sulfoxide

2: 1.0 ug/Plate 2-Aminoanthracene

3: 2.0 ug/Plate 2-Aminoanthracene

4: 5.0 ug/Plate Sodium Azide

5: 5.0 ug/Plate 2-Aminoanthracene

6: 10.0 ug/Plate 2-Aminoanthracene

7: 50.0 ug/Plate 9-Aminoacridine

8: 2.5 ug/Plate 4-Nitro-O-Phenylenediamine

9: 0.5 ug/Plate Mitomycin-C

10: 250.0 ug/Plate Methyl Methane Sulfonate

\*\* END OF REPORT \*\*