

Answer KEY - CSI : Case Profile – Tony DeMoy

1. MM = 78.12

Element	Mass (g)	mass/atomic mass =	mol	mol/smallest (then multiply?) =	#
<b>C</b>	<b>92.24</b>	<b>/12</b>	<b>7.68</b>	<b>/ 7.68</b>	<b>1</b>
<b>H</b>	<b>7.76</b>	<b>/1</b>	<b>7.76</b>	<b>/ 7.68</b>	<b>1</b>

$$C - 12 \times 1 = 12$$

$$H - 1 \times 1 = \frac{1}{13 \text{ g/mol}}$$

$$\text{mult} = \text{MM/EM} = 78.12 \text{ g/mol} / 13 \text{ g/mol} = 6$$

EF: CH

MF: C<sub>6</sub>H<sub>6</sub>

Compound Name: Benzene

2.

Element	Mass (g)	mass/atomic mass =	mol	mol/smallest (then multiply?) =	#
<b>H</b>	<b>3.74</b>	<b>/ 1</b>	<b>3.74</b>	<b>/3.7 = 1.01</b>	<b>1</b>
<b>C</b>	<b>44.43</b>	<b>/ 12</b>	<b>3.70</b>	<b>/3.7 = 1</b>	<b>1</b>
<b>N</b>	<b>51.83</b>	<b>/ 14</b>	<b>3.70</b>	<b>/3.7 = 1</b>	<b>1</b>

$$H - 1 \times 1 = 1$$

$$C - 12 \times 1 = 12$$

$$N - 14 \times 1 = \frac{14}{27 \text{ g/mol}}$$

$$\text{mult} = \text{MM/EM} = 27.03 \text{ g/mol} / 27 \text{ g/mol} = 1$$

EF: HCN

MF: HCN

Compound Name: Hydrogen cyanide

3.

Element	Mass (g)	mass/atomic mass =	mol	mol/smallest (then multiply?) =	#
<b>C</b>	<b>346.12</b>	<b>/12</b>	<b>28.84</b>	<b>/1.7 = 16.96</b>	<b>17</b>
<b>H</b>	<b>23.98</b>	<b>/1</b>	<b>23.95</b>	<b>/1.7 = 14.1</b>	<b>14</b>
<b>O</b>	<b>108.52</b>	<b>/16</b>	<b>6.78</b>	<b>/1.7 = 4</b>	<b>4</b>
<b>S</b>	<b>54.36</b>	<b>/32</b>	<b>1.7</b>	<b>/1.7 = 1</b>	<b>1</b>

$$C - 12 \times 1 = 12$$

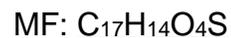
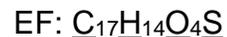
$$H - 1 \times 1 = 1$$

$$O - 16 \times 1 = 16$$

$$S - 32 \times 1 = 32$$

$$314\text{g/mol}$$

$$\text{mult} = \text{MM/EM} = 314.38\text{g/mol} / 314\text{g/mol} = 1$$



Compound Name: Rofecoxib

4.

Element	Mass (g)	mass/atomic mass =	mol	mol/smallest (then multiply?) =	#
<b>C</b>	<b>924.08</b>	<b>/ 12</b>	<b>77.01</b>	<b>/ 9.63 = 7.995</b>	<b>8</b>
<b>H</b>	<b>87.39</b>	<b>/ 1</b>	<b>87.39</b>	<b>/ 9.63 = 9.07</b>	<b>9</b>
<b>N</b>	<b>134.8</b>	<b>/ 14</b>	<b>9.63</b>	<b>/ 9.63 = 1</b>	<b>1</b>
<b>O</b>	<b>307.83</b>	<b>/ 16</b>	<b>19.24</b>	<b>/ 9.63 = 2</b>	<b>2</b>

$$C - 12 \times 8 = 96$$

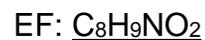
$$H - 1 \times 9 = 9$$

$$N - 14 \times 1 = 14$$

$$O - 16 \times 2 = 32$$

$$151\text{g/mol}$$

$$\text{mult} = \text{MM/EM} = 151.18\text{g/mol} / 151\text{g/mol} = 1$$



Compound Name: Paracetamol

Once you've found the unknown compounds, you can look at the autopsy report and record it's findings: The cause of death was the compound Rofecoxib.

Based on your findings, you conclude that the murderer was Finley Finch.