

What If Scenarios....ATP Production

	Situation	Response												
1	After glycolysis, only 1 molecule of pyruvate enters the mitochondrial matrix. Assume one glucose enters glycolysis.	<p>G PO KC</p>	<table border="1"> <thead> <tr> <th>HE</th> <th>ATP</th> </tr> </thead> <tbody> <tr> <td>2 NADH →</td> <td><del>2</del> 4</td> </tr> <tr> <td>1 NADH →</td> <td><del>3</del> 3</td> </tr> <tr> <td>3 NADH →</td> <td><del>6</del> 9</td> </tr> <tr> <td>1 FADH<sub>2</sub> →</td> <td><del>2</del> 2</td> </tr> </tbody> </table>	HE	ATP	2 NADH →	<del>2</del> 4	1 NADH →	<del>3</del> 3	3 NADH →	<del>6</del> 9	1 FADH <sub>2</sub> →	<del>2</del> 2	<p>21 ATP total</p>
HE	ATP													
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1 FADH <sub>2</sub> →	<del>2</del> 2													
2	The inner mitochondrial membrane is disrupted such that it no longer controls what enters/exits the matrix. Assume one glucose enters glycolysis.	<p>G PO KC</p>	<table border="1"> <thead> <tr> <th>HE</th> <th>ATP</th> </tr> </thead> <tbody> <tr> <td>2 NADH →</td> <td><del>2</del> 0</td> </tr> <tr> <td>2 NADH →</td> <td><del>0</del> 0</td> </tr> <tr> <td>6 NADH →</td> <td><del>2</del> 0</td> </tr> <tr> <td>2 FADH<sub>2</sub> →</td> <td><del>0</del> 0</td> </tr> </tbody> </table>	HE	ATP	2 NADH →	<del>2</del> 0	2 NADH →	<del>0</del> 0	6 NADH →	<del>2</del> 0	2 FADH <sub>2</sub> →	<del>0</del> 0	<p>4 ATP total</p>
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3	NADH dehydrogenase is removed from the ETC. Assume one glucose enters glycolysis.	<p>G PO KC</p>	<table border="1"> <thead> <tr> <th>HE</th> <th>ATP</th> </tr> </thead> <tbody> <tr> <td>2 NADH →</td> <td><del>2</del> 4</td> </tr> <tr> <td>2 NADH →</td> <td><del>0</del> 0</td> </tr> <tr> <td>6 NADH →</td> <td><del>2</del> 0</td> </tr> <tr> <td>2 FADH<sub>2</sub> →</td> <td><del>0</del> 4</td> </tr> </tbody> </table>	HE	ATP	2 NADH →	<del>2</del> 4	2 NADH →	<del>0</del> 0	6 NADH →	<del>2</del> 0	2 FADH <sub>2</sub> →	<del>0</del> 4	<p>12 ATP total</p>
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4	Cytochrome oxidase complex is removed from the ETC. Assume one glucose enters glycolysis.	<p>G PO KC</p>	<table border="1"> <thead> <tr> <th>HE</th> <th>ATP</th> </tr> </thead> <tbody> <tr> <td>2 NADH →</td> <td><del>2</del> 0</td> </tr> <tr> <td>2 NADH →</td> <td><del>0</del> 0</td> </tr> <tr> <td>6 NADH →</td> <td><del>2</del> 0</td> </tr> <tr> <td>2 FADH<sub>2</sub> →</td> <td><del>0</del> 0</td> </tr> </tbody> </table>	HE	ATP	2 NADH →	<del>2</del> 0	2 NADH →	<del>0</del> 0	6 NADH →	<del>2</del> 0	2 FADH <sub>2</sub> →	<del>0</del> 0	<p>4 ATP total</p>
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