

Appendix 2. The Full Apoptosis Questionnaire

Human Development (BIO380HF)

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Animation versus Graphics Evaluation: Apoptosis

Instructions. Depending on your group you will have been given the URL to a web page that displays either an animation or a static graphic of "Apoptosis". You will have been allowed to study the material for 10 minutes before being provided with this questionnaire. Now, we would like you to answer the following questions to the best of your ability.

Part I. Introduction

1. In this tutorial, which did you view?

- Animation
- Static figures

2. How many times were you able to get through the material provided?

- Once
- Twice
- Three times
- More than three times

3. Do you feel that you were given enough time to view this material before being asked to complete this questionnaire?

- No
- Yes

Part II. Specific Questions. Circle the correct answer...

1. Which of the following statements is true about apoptosis?

- a. It requires the phosphorylation of Bad
- b. It requires anti-apoptotic activity
- c. It involves mitochondrial membrane proteins
- d. It requires the phosphorylation of several proteins
- e. None of the above

2. An essential stage in the progression of apoptosis is

- a. The formation of ion channels formed from Bcl proteins
- b. The binding of bad to Bax proteins
- c. The formation of ion channels formed from cytochrome C
- d. The interaction of ions with the trophic factor receptor
- e. None of the above

3. An essential stage in the progression of apoptosis is

- a. The release of cytochrome C into the cytoplasm
- b. Ionic fluxes across the mitochondrial membrane
- c. The absence of trophic factor
- d. a and b are correct

e. All of the above are correct

4. For a cell to avoid apoptosis:

- a. The Bax proteins must remain associated with the Bcl proteins
- b. The outer mitochondrial membrane must be disrupted by ion channels
- c. The Bax protein must not be phosphorylated
- d. Trophic factors must not bind to their receptor
- e. All of the above are correct

5. The initial event involved in cell survival is:

- a. Trophic factor binding to its receptor followed by the dephosphorylation of Bad
- b. Trophic factor binding to its receptor followed by the dephosphorylation of Bcl
- c. Trophic factor binding to its receptor followed by the phosphorylation of Bcl
- d. Trophic factor binding to its receptor followed by the phosphorylation of Bad
- e. Trophic factor binding to its receptor followed by the dephosphorylation of Bax

6. The signalling events that mediate apoptosis do not involve:

- a. A receptor protein bound to the plasma membrane
- b. A protein bound to the inner mitochondrial membrane
- c. Proteins localized in the cytoplasm
- d. A protein bound to the outer mitochondrial membrane
- e. All of the above are correct

7. Procaspases:

- a. Phosphorylate other proteins
- b. Are specifically localized within the mitochondrion
- c. Are cleaved to pre and procaspase forms
- d. Require conversion to caspases to induce apoptosis
- e. All of the above are correct

8. Procaspase 9:

- a. Is activated by binding to an Apaf1/cytochrome c complex
- b. Is activated by binding to Bax ion channels
- c. Is activated by binding to Apaf1 before ions enter the mitochondria
- d. Is activated by binding to Apaf1 after caspase 9 is released
- e. None of the above are correct

9. In this example, the late stages of apoptosis involve:

- a. The cleavage of procaspase 3 followed by the cleavage of procaspase 10
- b. The cleavage of procaspase 9 followed by the cleavage of procaspase 8
- c. The cleavage of procaspase 9 followed by the cleavage of procaspase 3
- d. The cleavage of procaspase 3 followed by the cleavage of procaspase 9
- e. The cleavage of caspase 3 followed by the cleavage of caspase 10

10. Ions are able to regulate apoptosis because:

- a. Bax proteins form an ion channel in the inner mitochondrial membrane
- b. Bcl proteins form an ion channel in the inner mitochondrial membrane
- c. Bcl/Bax proteins together form an ion channel in the inner mitochondrial membrane
- d. Bcl/Bax proteins together form an ion channel in the outer mitochondrial membrane
- e. Bax proteins form an ion channel in the outer mitochondrial membrane

Part III. We want your Opinion.

1. Did you find the material provided a useful learning experience?

Yes

No

Don't have an opinion

2. If you answered No to the above, please explain why you feel this way?

3. Please feel free to provide any written comments you would like to make about any of your above responses and any of the material covered today.