

# A&P 03 Cellular Level of Organization Essay

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## 4. Chapter: A&P 03 Cellular Level of Organization Essay

### 1. A&P 03 Cellular Level of Organization Essay Questions

4.1.1. Visit this link (<http://openstaxcollege.org/l/diffusion>) to see dif...

Author: OpenStax College

Visit this link (<http://openstaxcollege.org/l/diffusion>) to see diffusion and how it is propelled by the kinetic energy of molecules in solution. How does temperature affect diffusion rate, and why?

- Higher temperatures speed up diffusion because molecules have more kinetic energy at higher temperatures.

Check the answer of this question online at QuizOver.com:

Question: [Visit this link http://openstaxcollege](http://openstaxcollege.org/l/diffusion) OpenStax College Anatomy Quest

4.1.2. Watch this video (<http://openstaxcollege.org/l/endomembrane1>) to le...

Author: OpenStax College

Watch this video (<http://openstaxcollege.org/l/endomembrane1>) to learn about the endomembrane system, which includes the rough and smooth ER and the Golgi body as well as lysosomes and vesicles. What is the primary role of the endomembrane system?

- Processing, packaging, and moving materials manufactured by the cell.

Check the answer of this question online at QuizOver.com:

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4.1.3. Watch this video (<http://openstaxcollege.org/l/DNArep>) to learn abo...

Author: OpenStax College

Watch this video (<http://openstaxcollege.org/l/DNArep>) to learn about DNA replication. DNA replication proceeds simultaneously at several sites on the same molecule. What separates the base pair at the start of DNA replication?

- an enzyme

Check the answer of this question online at QuizOver.com:

Question: [Watch this video http://openstaxcollege.org/l/DNArep](http://openstaxcollege.org/l/DNArep) OpenStax College Anatomy



4.1.4. Watch this video (<http://openstaxcollege.org/l/ribosome>) to learn a...

Author: OpenStax College

Watch this video (<http://openstaxcollege.org/l/ribosome>) to learn about ribosomes. The ribosome binds to the mRNA molecule to start translation of its code into a protein. What happens to the small and large ribosomal subunits at the end of translation?

- They separate and move and are free to join translation of other segments of mRNA.

Check the answer of this question online at QuizOver.com:

Question: [Watch this video http://openstaxcollege.org/l/ribosome](http://openstaxcollege.org/l/ribosome) OpenStax College Anatomy

#### 4.1.5. Visit this link (<http://openstaxcollege.org/l/mitosis>) to learn abo...

Author: OpenStax College

Visit this link (<http://openstaxcollege.org/l/mitosis>) to learn about mitosis. Mitosis results in two identical diploid cells. What structures form during prophase?

- the spindle

Check the answer of this question online at [QuizOver.com](http://www.quizover.com):

Question: [Visit this link http://openstaxcollege](http://openstaxcollege.org/l/mitosis) OpenStax College Anatomy Quest

#### 4.1.6. What materials can easily diffuse through the lipid bilayer, and why?

Author: OpenStax College

What materials can easily diffuse through the lipid bilayer, and why?

- Only materials that are relatively small and nonpolar can easily diffuse through the lipid bilayer. Large particles cannot fit in between the individual phospholipids that are packed together, and polar molecules are repelled by the hydrophobic/nonpolar lipids that line the inside of the bilayer.

Check the answer of this question online at QuizOver.com:

Question: [What materials can easily diffuse through OpenStax College Anatomy](#)

#### 4.1.7. Why is receptor-mediated endocytosis said to be more selective than...

Author: OpenStax College

Why is receptor-mediated endocytosis said to be more selective than phagocytosis or pinocytosis?

- Receptor-mediated endocytosis is more selective because the substances that are brought into the cell are the specific ligands that could bind to the receptors being endocytosed. Phagocytosis or pinocytosis, on the other hand, have no such receptor-ligand specificity, and bring in whatever materials happen to be close to the membrane when it is enveloped.

Check the answer of this question online at QuizOver.com:

Question: [Why is receptor-mediated endocytosis said OpenStax College Anatomy](#)

#### 4.1.8. What do osmosis, diffusion, filtration, and the movement of ions aw...

Author: OpenStax College

What do osmosis, diffusion, filtration, and the movement of ions away from like charge all have in common? In what way do they differ?

- These four phenomena are similar in the sense that they describe the movement of substances down a particular type of gradient.  
Osmosis and diffusion involve the movement of water and other substances down their concentration gradients, respectively.  
Filtration describes the movement of particles down a pressure gradient, and the movement of ions away from like charge describes their movement down their electrical gradient.

Check the answer of this question online at QuizOver.com:

Question: [What do osmosis diffusion filtration and OpenStax College Anatomy](#)

#### 4.1.9. Explain why the structure of the ER, mitochondria, and Golgi appara...

Author: OpenStax College

Explain why the structure of the ER, mitochondria, and Golgi apparatus assist their respective functions.

- The structure of the Golgi apparatus is suited to its function because it is a series of flattened membranous discs; substances are modified and packaged in sequential steps as they travel from one disc to the next.

The structure of Golgi apparatus also involves a receiving face and a sending face, which organize cellular products as they enter and leave the Golgi apparatus.

The ER and the mitochondria both have structural specializations that increase their surface area. In the mitochondria, the inner membrane is extensively folded, which increases surface area for ATP production. Likewise, the ER is elaborately wound throughout the cell, increasing its surface area for functions like lipid synthesis, Ca<sup>++</sup> storage, and protein synthesis.

Check the answer of this question online at QuizOver.com:

Question: [Explain why the structure of the ER OpenStax College Anatomy Quest](#)

#### 4.1.10. Compare and contrast lysosomes with peroxisomes: name at least two ...

Author: OpenStax College

Compare and contrast lysosomes with peroxisomes: name at least two similarities and one difference.

- Peroxisomes and lysosomes are both cellular organelles bound by lipid bilayer membranes, and they both contain many enzymes.  
However, peroxisomes contain enzymes that detoxify substances by transferring hydrogen atoms and producing H<sub>2</sub>O<sub>2</sub>, whereas the enzymes in lysosomes function to break down and digest various unwanted materials.

Check the answer of this question online at QuizOver.com:

Question: [Compare and contrast lysosomes with OpenStax College Anatomy Quest](#)

#### 4.1.11. Explain in your own words why DNA replication is said to be "semico...

Author: OpenStax College

Explain in your own words why DNA replication is said to be "semiconservative"?

- DNA replication is said to be semiconservative because, after replication is complete, one of the two parent DNA strands makes up half of each new DNA molecule. The other half is a newly synthesized strand. Therefore, half ("semi") of each daughter DNA molecule is from the parent molecule and half is a new molecule.

Check the answer of this question online at QuizOver.com:

Question: [Explain in your own words why DNA replication OpenStax College Anatomy](#)



#### 4.1.12. Why is it important that DNA replication take place before cell div...

Author: OpenStax College

Why is it important that DNA replication take place before cell division? What would happen if cell division of a body cell took place without DNA replication, or when DNA replication was incomplete?

- During cell division, one cell divides to produce two new cells. In order for all of the cells in your body to maintain a full genome, each cell must replicate its DNA before it divides so that a full genome can be allotted to each of its offspring cells.  
If DNA replication did not take place fully, or at all, the offspring cells would be missing some or all of the genome.  
This could be disastrous if a cell was missing genes necessary for its function and health.

Check the answer of this question online at QuizOver.com:

Question: [Why is it important that DNA replication OpenStax College Anatomy](#)

#### 4.1.13. Briefly explain the similarities between transcription and DNA repl...

Author: OpenStax College

Briefly explain the similarities between transcription and DNA replication.

- Transcription and DNA replication both involve the synthesis of nucleic acids. These processes share many common features-particularly, the similar processes of initiation, elongation, and termination. In both cases the DNA molecule must be untwisted and separated, and the coding (i.e., sense) strand will be used as a template. Also, polymerases serve to add nucleotides to the growing DNA or mRNA strand. Both processes are signaled to terminate when completed.

Check the answer of this question online at QuizOver.com:

Question: [Briefly explain the similarities between OpenStax College Anatomy](#)

#### 4.1.14. Contrast transcription and translation. Name at least three differe...

Author: OpenStax College

Contrast transcription and translation. Name at least three differences between the two processes.

- Transcription is really a "copy" process and translation is really an "interpretation" process, because transcription involves copying the DNA message into a very similar RNA message whereas translation involves converting the RNA message into the very different amino acid message.  
The two processes also differ in their location: transcription occurs in the nucleus and translation in the cytoplasm.  
The mechanisms by which the two processes are performed are also completely different: transcription utilizes polymerase enzymes to build mRNA whereas translation utilizes different kinds of RNA to build protein.

Check the answer of this question online at QuizOver.com:

Question: [Contrast transcription and translation. OpenStax College Anatomy](#)

#### 4.1.15. What would happen if anaphase proceeded even though the sister chro...

Author: OpenStax College

What would happen if anaphase proceeded even though the sister chromatids were not properly attached to their respective microtubules and lined up at the metaphase plate?

- One or both of the new daughter cells would accidentally receive duplicate chromosomes and/or would be missing certain chromosomes.

Check the answer of this question online at QuizOver.com:

Question: [What would happen if anaphase proceeded OpenStax College Anatomy](#)

#### 4.1.16. What are cyclins and cyclin-dependent kinases, and how do they inte...

Author: OpenStax College

What are cyclins and cyclin-dependent kinases, and how do they interact?

- A cyclin is one of the primary classes of cell cycle control molecules, while a cyclin-dependent kinase (is one of a group of molecules that work together with cyclins to determine progression past cell checkpoints.

By interacting with many additional molecules, these triggers push the cell cycle forward unless prevented from doing so by "stop" signals, if for some reason the cell is not ready.

Check the answer of this question online at QuizOver.com:

Question: [What are cyclins and cyclin-dependent OpenStax College Anatomy Quest](#)

#### 4.1.17. Explain how a transcription factor ultimately determines whether or...

Author: OpenStax College

Explain how a transcription factor ultimately determines whether or not a protein will be present in a given cell?

- Transcription factors bind to DNA and either promote or inhibit the transcription of a gene. If they promote the transcription of a particular gene, then that gene will be transcribed and the mRNA subsequently translated into protein. If gene transcription is inhibited, then there will be no way of synthesizing the gene's corresponding protein.

Check the answer of this question online at QuizOver.com:

Question: [Explain how a transcription factor ultimately OpenStax College Anatomy](#)

#### 4.1.18. Discuss two reasons why the therapeutic use of embryonic stem cells...

Author: OpenStax College

Discuss two reasons why the therapeutic use of embryonic stem cells can present a problem.

- Embryonic stem cells derive from human embryos, which are destroyed to obtain the cells. The destruction of human embryos is an ethical problem. And, the DNA in an embryonic stem cell would differ from the DNA of the person being treated, which could result in immune problems or rejected of tissue.

Check the answer of this question online at QuizOver.com:

Question: [Discuss two reasons why the therapeutic OpenStax College Anatomy](#)