

Human Anatomy & Physiology

Cellular Organelles Case Studies

Read about each of the following diseases that affect various cellular organelles. Take notes or save your information to review later. After reading about the following diseases, read the five patient case studies.

Requirements

In a typed document, analyze each patient. The following must be included in each response:

1. Tell which disease they have.
2. Tell which organelle it affects.
3. Support your findings from the information on the diseases researched and the information given in the case study reading.
4. Write in complete sentences (paragraph format). Upload to Edmodo. There are correct answers for each case.

Disease List

- Cystic Fibrosis
- Danon Disease
- Adrenoleukodystrophy (ALD)
- Immotile ciliary syndrome

Patients 1 & 2

Nathan and Tracy have lived in the state of Connecticut most of their lives. They are both in their early 30's and recently married. They have been trying to have their first child for a number of months but Tracy has been unable to get pregnant. Recently, Nathan and Tracy decided to go to their family physician to see if there may be something wrong. They were referred to two fertility specialists who would determine both Tracy and Nathan's reproductive health status. Tracy's appointment confirmed that all of her reproductive organs and endocrine organs were functional and should result in conceiving a baby. The men's health specialist confirmed that Nathan's sperm count was normal. After several days, the specialist received a micrograph of the sperm cells and noted a structural defect in the organelle responsible for cell movement. Determine which organelle is responsible for the difficulty Nathan and Tracy have experienced while trying to start their family. *Complete the required patient analysis by answering the questions provided in the instructions.*

Patient 3

Sabrina is a toddler at a preparatory school. She is a good helper and loves to share with the other children in class. A few months ago, Sabrina developed a persistent cough that has worsened over time. She has also had trouble breathing over the past week or so. Although she loves to eat fruits and vegetables, her mother has noticed that she has been passing very greasy stools when she has her bowel movements. Her parents have also noticed that over the past 6-8 months, Sabrina has not gained much weight. Since birth, she has gained weight at a very slow pace compared to other children her age. They attributed her slow weight gain to their family's naturally thin frames and Sabrina's recent enrollment in ballet. Her parents decided it was time she see a doctor and made an appointment with the family physician. The doctor asked her a number of questions about the family's health history and daily habits. The doctor decided it was necessary to take a biopsy of the cells that line the bronchus (passageway to the lungs). After several days, the biopsy report has come back along with a micrograph of the bronchial cells. Sabrina's cells are producing a very thick mucus. *Complete the required patient analysis by answering the questions provided in the instructions.*

Patient 4

Lucas is an 8 year old music lover at a local school nearby. Lucas was recently called into the guidance office due to his counselor's concern for his disruptive behavior as reported by his teacher. He has also been very unproductive and somewhat rude to his guitar instructor for the past two weeks. When he became lethargic, weak, and dizzy, his teacher and parents realized that his problem was not just temper tantrums. His skin darkened, blood sugar levels plummeted, heart rhythm altered, and the levels of electrolytes in his body fluids became imbalanced. He lost control over his limbs as his nervous system continued to deteriorate. Lorenzo's parents took him to many doctors before they found someone to do molecular and enzymatic testing, this resulting in his diagnosis. *Complete the required patient analysis by answering the questions provided in the instructions.*

Patient 5

Felicity is a studious 19 year old who is also a valuable member of her school's soccer team. She received an athletic scholarship to three universities during her senior year in high school. As an athlete, she has always been in great shape. However, Felicity recently began feeling ill with noticeable signs shortness of breath and extreme muscle weakness. Because of her athletic history, she became extremely worried when she also noticed her heart racing multiple times while she was in class this week. She informed her coach and her parents and she is being seen by a physician. After multiple visits and multiple diagnostic procedures over several months, a cardiovascular specialist determined that Felicity is in the early stages of dilated cardiomyopathy. *Complete the required patient analysis by answering the questions provided in the instructions.*