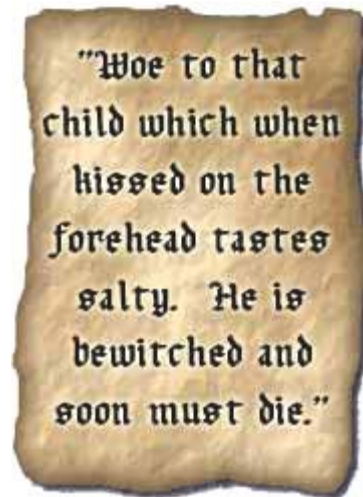


CASE TEACHING NOTES for "Woe to That Child: A Case of Cystic Fibrosis"

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—Northern European folklore

INTRODUCTION

Cystic fibrosis is an autosomal recessive disease that results in blockage of pancreatic ducts and air passages due to the inability to transport chloride (and sodium) out of the cell. The end result is that water does not leave the cell and enter the extracellular fluid (ECF), resulting in accumulation of thick, viscous mucus that clogs air passages and gland ducts. This case was developed to help students tie together elements of cell physiology, osmosis and tonicity, and membrane transport processes.

The case was designed for students in the second semester of the second year of a six-year doctor of pharmacy program. The case study would also work for any A&P course in which basic cell physiology, osmosis and tonicity, and membrane transport has already been discussed.

Objectives

Upon successful completion of this case, students will be able to:

- Describe basic mechanisms of genetic inheritance, specifically the difference between a recessive and a dominant trait.
- Describe the mechanism for protein synthesis including transcription, translation, and modification within the Golgi apparatus.
- Describe how alterations in membrane transport may affect the tonicity of the ECF.
- Explain in detail the mechanism whereby altering ECF solute concentrations can alter the water composition of the ECF.

CLASSROOM MANAGEMENT

As designed, groups of 4 to 5 students would be given at least three days to do the case (outside of the classroom) and one class session would be used to discuss the case, first comparing answers within the groups and then having the groups present their answers to one another. The instructor chooses groups ahead of time. Resources to be used are (1) medical physiology texts, (2) pathophysiology texts, (3)

physiology texts, and (4) the Internet. During the class period when the case is discussed, written answers are submitted prior to any discussion. The class then discusses the case with the professor acting as moderator / resident expert. The written responses are screened for plagiarism utilizing Google.

ANSWER KEY

Since the case is geared to pharmacy students, the questions deal with the disease mechanisms, symptoms, and treatment options. These questions can easily be modified for non-pharmacy students.

Answers to the questions posed in the case study are provided in a separate answer key to the case. Those answers are password-protected. To access the answers for this case, go to [the key](#). You will be prompted for a username and password. If you have not yet registered with us, you can see whether you are eligible for an account by reviewing our [password policy and then apply online](#).

EDITOR'S NOTE

Teachers interested in this case may also be interested in another case on cystic fibrosis on our website entitled [Sometimes it is All in the Genes](#) and its accompanying [teaching notes](#).

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Internet

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