

CASE TEACHING NOTES for “A Case of Seasonal Affective Disorder”

by

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INTRODUCTION

Seasonal affective disorder (SAD), also known as seasonal depression, results from abnormally high levels of the hormone melatonin, which is secreted by the pineal gland. The pineal gland normally secretes melatonin in a diurnal fashion in response to changes in exposure to ultraviolet light. Since light inhibits the production of melatonin, it is secreted by the pineal gland when most of us are asleep. The diurnal secretion of melatonin serves to regulate several physiological processes and events such as the sleep-wake cycle, body temperature, and blood pressure.

To prepare for this case study, students should have knowledge of the anatomic location of the pineal gland, the hormone it secretes, and the concept of circadian rhythms.

Objectives

After answering and discussing the questions at the end of the case, students will have learned the following:

- the functional relationship between the retinas and the pineal gland;
- the effect of light on the production of melatonin;
- examples of physiological processes normally regulated by the diurnal secretion of melatonin by the pineal gland;
- the etiology and treatment of seasonal affective disorder;
- the use and potential mis-use of melatonin in the treatment of other disease states;
- that the functional state of the pineal gland can be altered by certain environmental influences other than exposure to light; and
- the histologic structure of the pineal gland.

This case study has been used in both a sophomore-level course in human anatomy and physiology and a senior-level course in general physiology.

CLASSROOM MANAGEMENT

Students are provided with a printed copy of the case at least one week prior to the class in which the case will be discussed. They are told which concepts to review before attempting to answer the questions, and reference books are placed on reserve in the college library for their use. I ask the students to do their best to complete the questions beforehand and encourage them to collaborate with one another. Students are not required to turn in written answers to the questions, but, rather, are called upon at random to answer the questions during the class discussion. These same questions appear again later on regularly scheduled course

examinations. I tell students at the beginning of the term that the more effort they put into preparing each case, the more they will learn, the more fun they will have, and the better they will perform on the exams.

Answer Key

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 or write to **answerkey@sciencecases.org**.

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