



[KidsHealth.org/classroom](http://KidsHealth.org/classroom)

## Teacher's Guide

This guide includes:

- Standards
- Related Links
- Discussion Questions
- Activities for Students
- Reproducible Materials

## Standards

This guide correlates with the following National Health Education Standards:

Students will:

- Comprehend concepts related to health promotion and disease prevention to enhance health.
- Analyze the influence of family, peers, culture, media, technology, and other factors on health behaviors.
- Demonstrate the ability to access valid information and products and services to enhance health.
- Demonstrate the ability to use interpersonal communication skills to enhance health and avoid or reduce health risks.
- Demonstrate the ability to use decision-making skills to enhance health.
- Demonstrate the ability to use goal-setting skills to enhance health.
- Demonstrate the ability to practice health-enhancing behaviors and avoid or reduce health risks.
- Demonstrate the ability to advocate for personal, family, and community health.

National Health Education Standards:  
[www.cdc.gov/healthyschools/sher/standards/index.htm](http://www.cdc.gov/healthyschools/sher/standards/index.htm)

The endocrine system is responsible for many amazing bodily processes: growth, sexual development, the fight or flight response to danger, and the process by which cells make energy and synthesize insulin. How the endocrine system works is complicated, but these activities will help your students begin to understand how it gets the job done.

## Related KidsHealth Links

### Articles for Teens:

#### Endocrine System

[TeensHealth.org/teen/your\\_body/body\\_basics/endocrine.html](http://TeensHealth.org/teen/your_body/body_basics/endocrine.html)

#### Growth Problems

[TeensHealth.org/teen/diseases\\_conditions/growth/growth\\_hormone.html](http://TeensHealth.org/teen/diseases_conditions/growth/growth_hormone.html)

#### Thyroid Disease

[TeensHealth/teen/diseases\\_conditions/growth/thyroid.html](http://TeensHealth/teen/diseases_conditions/growth/thyroid.html)

## Discussion Questions

*Note: The following questions are written in language appropriate for sharing with your students.*

1. What's a gland? What's a hormone? How do glands and hormones work together?
2. How does the endocrine system work with other body systems, such as the nervous system and the circulatory system?
3. The body makes more than 20 hormones, each with a specific function. How is it that hormones know exactly which tissues and organs to communicate with? Describe this process.
4. The endocrine system not only produces hormones but also has a self-regulating system that senses when to shut them off. What is this system called? Describe how it works.
5. What are some disorders of the endocrine system? How do doctors treat them?



## Activities for Students

*Note: The following activities are written in language appropriate for sharing with your students.*

### Adventures of the Endo-Men!

#### Objectives:

Students will:

- Demonstrate their knowledge of the endocrine system by creating a comic strip

#### Materials:

- Computer with Internet access
- “Adventures of the Endo-Men!” handout
- Colored pencils

#### Class Time:

- 60 minutes

#### Activity:

Faster than a speeding hormone! More powerful than a pair of parathyroids! Able to reach distant target receptors in a single bound!

Well, you get the picture. The endocrine system does some pretty amazing stuff. And here’s your chance to capture all of its dramatic flair in a comic strip.

Using the TeensHealth.org articles, research the parts and functions of the endocrine system. Then choose the one that interests you most. It could be the pituitary, the pea-sized “master gland.” Or maybe it’s the hormone adrenaline that revs you up. Or maybe you’re positively pumped about the negative feedback system.

Whatever you choose, make sure your cartoon uses words and images to tell a story and show what you know!

#### Extension:

Have students reflect on the similarities and differences among the comic strips they created. Were certain glands or functions chosen more often? Were certain words and images used more often than others? Why do you think that is?



## Glandular High School Yearbook

### Objectives:

Students will:

- Demonstrate their knowledge of the endocrine system by creating a yearbook profile for glands

### Materials:

- Computer with Internet access
- “Glandular High School Yearbook” handout
- Pencil or pen

### Class Time:

- 40 minutes

### Activity:

[Note to instructor: This activity may be done individually or in groups. Depending on time constraints, you may choose to have students profile one gland or create a booklet for all eight.]

As the editor of the Glandular H.S. Yearbook, your job is to study the glands of the endocrine system, and really get to know what each one is about. Then share your knowledge by creating a yearbook profile for the gland or glands of your choice. Your profile page will include the gland’s name and picture, as well as the following sections:

About me ...

You might be surprised to know that I ...

One thing I can’t live without is ...

My greatest achievement is ...

Favorite song or quotation ...

One word that sums me up ...

Most likely to ...

## Reproducible Materials

### Handout: Adventures of the Endo-Men!

[KidsHealth.org/classroom/9to12/body/systems/endocrine\\_handout1.pdf](http://KidsHealth.org/classroom/9to12/body/systems/endocrine_handout1.pdf)

### Handout: Glandular High School Yearbook

[KidsHealth.org/classroom/9to12/body/systems/endocrine\\_handout2.pdf](http://KidsHealth.org/classroom/9to12/body/systems/endocrine_handout2.pdf)

### Quiz: Endocrine System

[KidsHealth.org/classroom/9to12/body/systems/endocrine\\_quiz.pdf](http://KidsHealth.org/classroom/9to12/body/systems/endocrine_quiz.pdf)

### Answer Key: Endocrine System

[KidsHealth.org/classroom/9to12/body/systems/endocrine\\_quiz\\_answers.pdf](http://KidsHealth.org/classroom/9to12/body/systems/endocrine_quiz_answers.pdf)

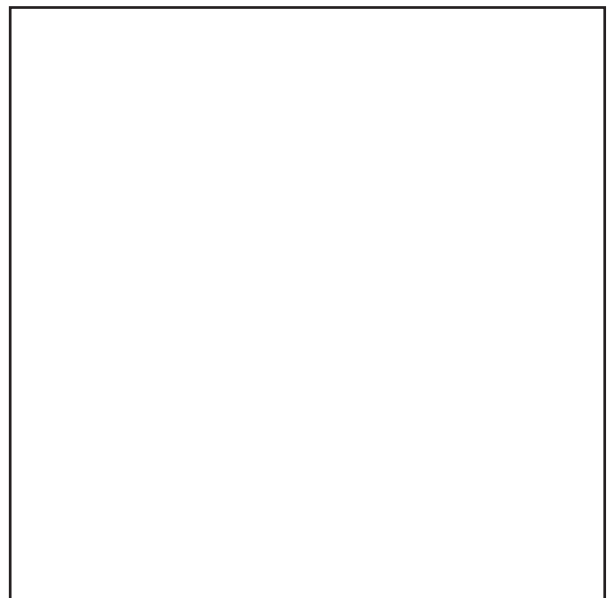
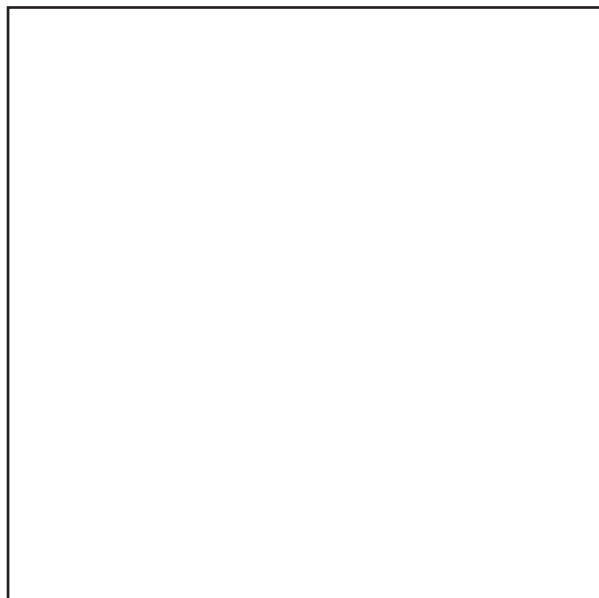
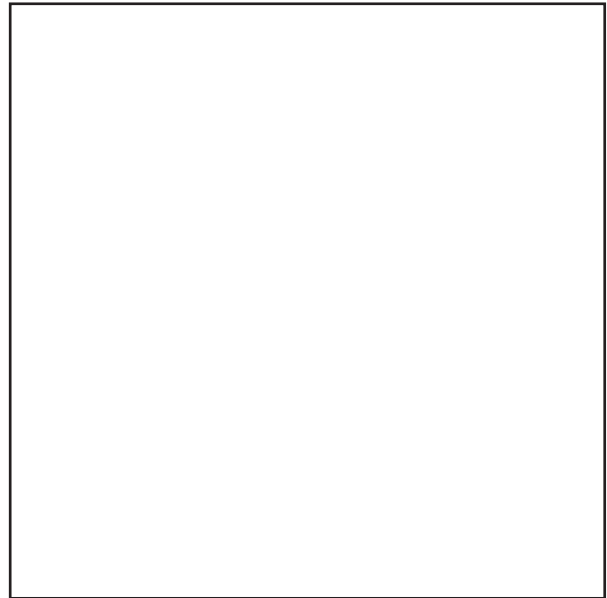
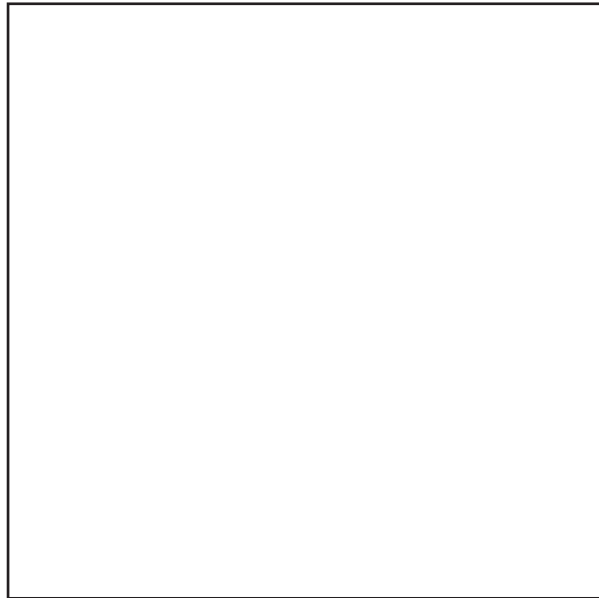


Name: \_\_\_\_\_

Date: \_\_\_\_\_

## Adventures of the Endo-Men!

Instructions: Create a cartoon strip depicting one of the endocrine system's incredible abilities. Don't forget to name your Endo-Man or Endo-Woman superhero! You can use these storyboard cells on this side of the page to create your hero or use the blank sides of the pages.



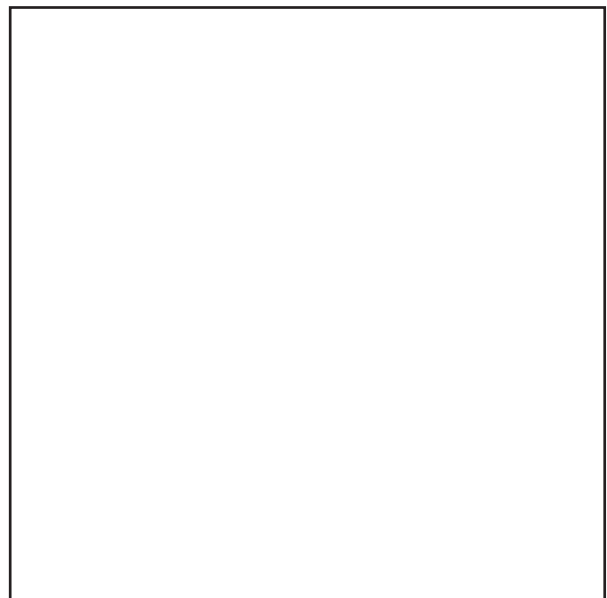
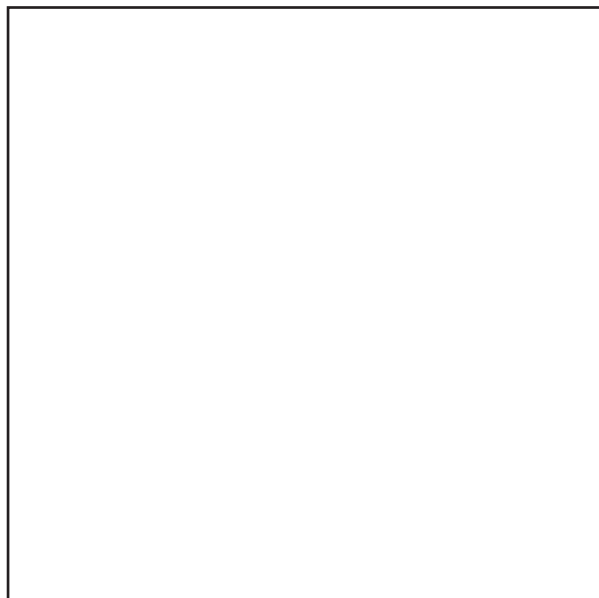
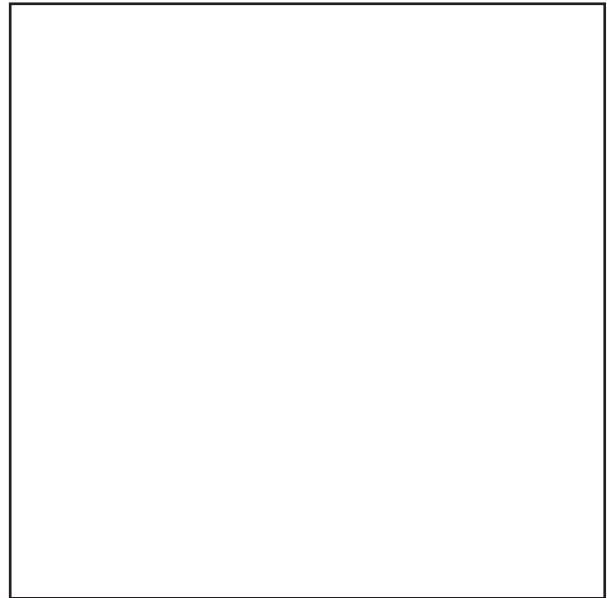
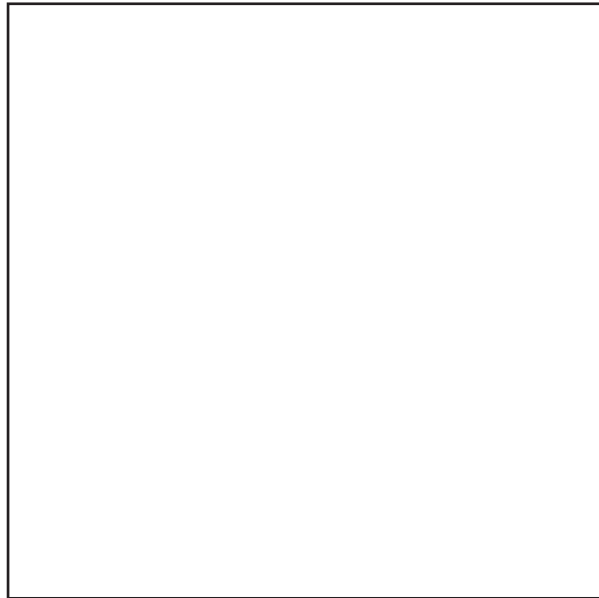


Name: \_\_\_\_\_

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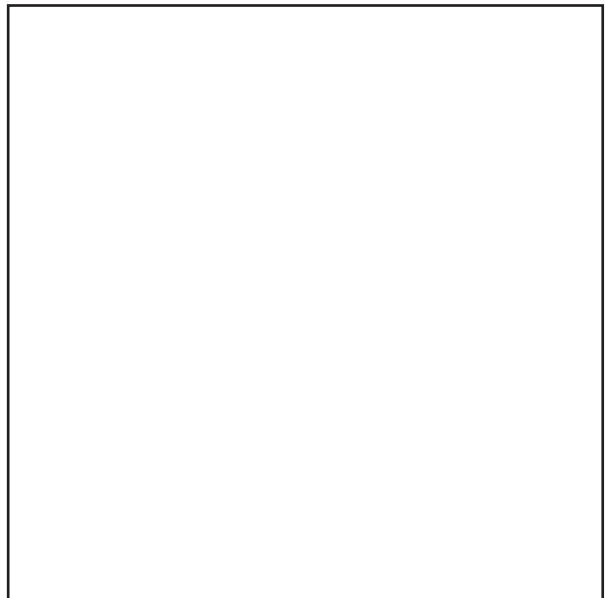
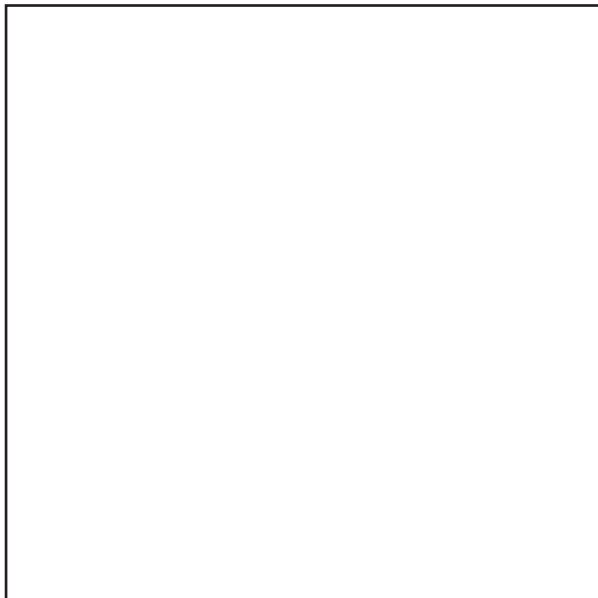
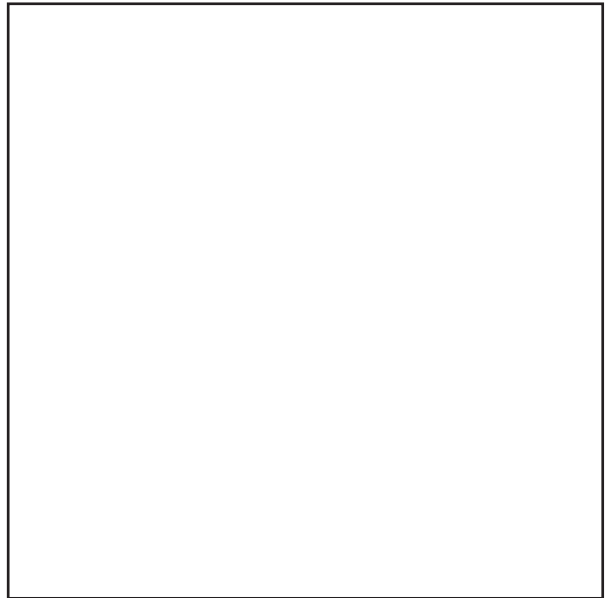
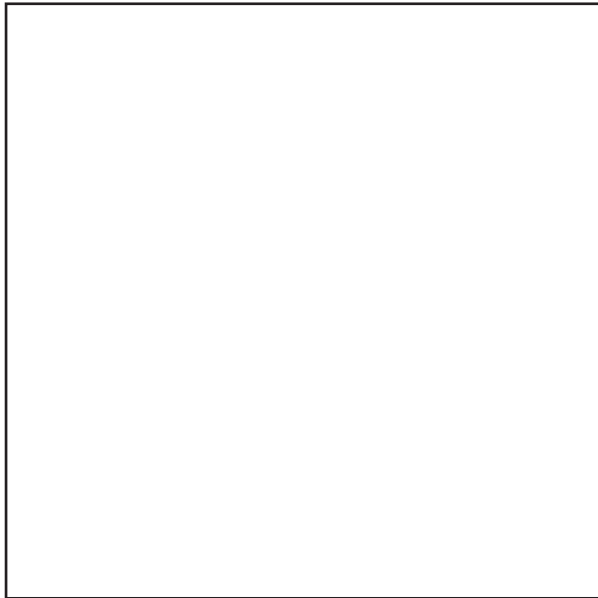


Name: \_\_\_\_\_

Date: \_\_\_\_\_

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Instructions: Create a cartoon strip depicting one of the endocrine system's incredible abilities. Don't forget to name your Endo-Man or Endo-Woman superhero! You can use these storyboard cells on this side of the page to create your hero or use the blank sides of the pages.





Name: \_\_\_\_\_

Date: \_\_\_\_\_

## Glandular High School Yearbook

Instructions: Choose a gland or glands to profile for this year's Glandular H.S. Yearbook.

About me ...

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You might be surprised to know that I ...

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One thing I can't live without is ...

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My greatest achievement is ...

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(Insert image of gland or glands in or over this box and name of gland below this box.)

Favorite song or quote ...

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One word that sums me up ...

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Most likely to ...

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Name: \_\_\_\_\_

Date: \_\_\_\_\_

## Quiz

Instructions: Answer each question.

1. List five functions of the endocrine system:

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2. In general, the endocrine system is in charge of body processes that happen slowly, such as cell growth. Faster processes like breathing and body movement are controlled by the \_\_\_\_\_.
3. The brain contains these three glands: pituitary gland, \_\_\_\_\_, \_\_\_\_\_.
4. \_\_\_\_\_ are chemical messengers that transfer information and instructions from one set of cells to another.
5. Once a hormone is secreted, it travels from the endocrine gland that produced it through the bloodstream to the cells designed to receive its message. These cells are called \_\_\_\_\_.
6. The pancreas produces two important hormones, \_\_\_\_\_ and \_\_\_\_\_.
7. If the pancreas doesn't produce enough insulin, the result is \_\_\_\_\_.
8. \_\_\_\_\_ hormone controls the level of calcium in the blood.
9. The thyroid gland is involved in \_\_\_\_\_, the process by which the fuel in the food we eat is converted into cellular energy.
10. When hormone levels reach a certain normal amount in the blood, the endocrine system has a built-in turnoff process. It is called \_\_\_\_\_.
11. Endocrine glands release more than \_\_\_\_\_ major hormones directly into the bloodstream.
12. The pineal gland secretes \_\_\_\_\_.
13. If the pituitary glands release hormones that stimulate the gonads to produce sex hormones too early, some kids may experience \_\_\_\_\_ and begin to go through puberty at a very young age.





## Quiz Answer Key

- List five functions of the endocrine system:  
*Any five of the following: regulating mood, growth and development; tissue function; the fight or flight response; metabolism; blood glucose levels; sexual function and reproductive processes.*  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- In general, the endocrine system is in charge of body processes that happen slowly, such as cell growth. Faster processes like breathing and body movement are controlled by the nervous system.
- The brain contains these three glands: pituitary gland, hypothalamus, pineal gland (or pineal body).
- Hormones are chemical messengers that transfer information and instructions from one set of cells to another.
- Once a hormone is secreted, it travels from the endocrine gland that produced it through the bloodstream to the cells designed to receive its message. These cells are called target cells.
- The pancreas produces two important hormones, insulin and glucagon.
- If the pancreas doesn't produce enough insulin, the result is diabetes.
- Parathyroid hormone controls the level of calcium in the blood.
- The thyroid gland is involved in metabolism, the process by which the fuel in the food we eat is converted into cellular energy.
- When hormone levels reach a certain normal amount in the blood, the endocrine system has a built-in turnoff process. It is called negative feedback system.
- Endocrine glands release more than 20 major hormones directly into the bloodstream.
- The pineal gland secretes melatonin.
- If the pituitary glands release hormones that stimulate the gonads to produce sex hormones too early, some kids may experience precocious puberty and begin to go through puberty at a very young age.