

# Homeostasis

**Media Type:** Video  
**Duration:** 26 minutes

**Goal:** To introduce the processes required to maintain homeostasis in the body and examine classifications of homeostasis disturbance.

**Description:** This presentation introduces homeostasis processes, then provides detailed analysis of four examples of homeostasis processes in the human body. Finally, the presentation examines the causes of homeostasis disturbance.

**Objectives:**

1. To describe biological and chemical processes which maintain homeostasis.
2. To recognize various states of cellular homeostasis to identify infections, diseases and mutation.



College & Career Readiness Anchor Standards for Reading

## Reading Standards for Literacy in Science & Technical Subjects

Key Ideas & Details	Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.	
	9-10.1	Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.
	9-10.3	Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.
	11-12.2	Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.
Integration of Knowledge & Ideas	11-12.3	Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
	Integrate and evaluate content presented in diverse formats and media, including visually and quantitatively, as well as in words.	
	9-10.7	Translate quantitative or technical information expressed in words in a text into visual form and translate information expressed visually or mathematically into words.
	11-12.7	Integrate and evaluate multiple sources of information presented in diverse formats and media in order to address a question or solve a problem.

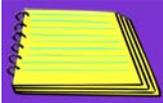
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## College & Career Readiness Anchor Standards for Speaking and Listening

Speaking & Listening Standards	
Comprehension & Collaboration	Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.
	Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.
	<i>9-12.1</i> Initiate and participate effectively in a range of collaborative discussions with diverse partners on grades 9–12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.
	<i>9-10.2</i> Integrate multiple sources of information presented in diverse media or formats evaluating the credibility and accuracy of each source.
	<i>11-12.2</i> Integrate multiple sources of information presented in diverse formats and media in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.
Presentation of Knowledge & Ideas	Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.
	Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.
	Adapt speech to a variety of contexts and communicative tasks, demonstrating command of formal English when indicated or appropriate.
	<i>9-10.4</i> Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task.
	<i>9-10.5</i> Make strategic use of digital media in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.
	<i>9-10.6</i> Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate.
	<i>11-12.4</i> Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.
	<i>11-12.5</i> Make strategic use of digital media in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.
	<i>11-12.6</i> Adapt speech to a variety of contexts and tasks, demonstrating a command of formal English when indicated or appropriate.

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## Lesson Plan

**Class 1:** Pass out the *Homeostasis Vocabulary Handout* and *Worksheet* for students to use as a reference during the presentation. Show the *Homeostasis - Introduction to Homeostasis* segment. Students should complete the corresponding *Assessment*. Have students begin the *Labeling Homeostasis Systems Activity*.



7 min.

**Class 2:** Remind students to continue using the *Vocabulary Handout* and *Worksheet*. Show *Homeostasis - Examples of Homeostasis* and have students complete the corresponding *Assessment*. Introduce the *Homeostasis Poster Project* and allow the remainder of the class for students to work.



12 min.

**Class 3:** Have students complete the *Homeostasis in Action Activity*. Conduct a class discussion and ask students to share their answers. Allow the remainder of the class for students to work on their *Projects*.

**Class 4:** Remind students to continue using the *Vocabulary Handout* and *Worksheet*. Show the *Homeostasis - When Good Homeostasis Goes Bad* segment. Students should complete the corresponding *Assessment*. Have students begin the *Worst Disease Awards Activity*.



7 min.

**Class 5:** Allow the entire class for students to complete the *Activity*.

**Class 6:** Administer the *Homeostasis Final Assessment* and allow time for students to complete it. Students should share their *Projects* with the class..



## Lesson Links

### The Encyclopedia of Earth

- <http://www.eoearth.org>

### Centers for Disease Control and Prevention

- <http://www.cdc.gov>



## Career & Technical Student Organizations

### Skills USA

- Health Knowledge Bowl
- Medical Terminology

### Health Occupations Students of America

- Medical Spelling
- Medical Terminology
- Knowledge Tests - Pathophysiology
- Public Service Announcement



## Career Connections

Using the *Career Connections Activity*, allow students to explore the various careers associated with this lesson. See the *Activity* for more details. *If student licenses have been purchased:* Students will select the interviews to watch based on your directions. *If only a teacher license is purchased:* Show students all the career interviews and instruct them to only complete the interview form for the required number of interviews.

- iCEV50790, Carrie Schwarz, Ph.D., Biologist
- iCEV50484, John Keele, Ph.D., Molecular Computational Biologist, U.S. Meat Animal Research Center
- iCEV50841, Kathy Chauncey, Ph.D., Associate Professor, Health Sciences Center, Texas Tech University

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## Lab Activities

### Labeling Homeostasis System

#### Directions:

Students will be given a worksheet with diagrams of the seven body systems responsible for homeostasis processes in the body. Using the word bank provided, students will need to label the diagrams. .

### Homeostasis in Action

#### Directions:

Students will be placed in groups of two. One student will be the recorder, while one will be the test subject. The test subject's heart rate, breathing rate, body temperature, perspiration level and change in skin color will be recorded before, during (every two minutes) and after eight minutes of exercise. After completing the experiment, students will answer questions about how they saw homeostasis affected.

### Worst Disease Awards

#### Directions:

In groups of three, students will be assigned a disease from the list on *Teacher Instructor Sheet*. Each group will research their assigned disease and will be responsible for creating a presentation to the class which argues for their disease as being the worst disease in the world. At the end, the class will vote for which disease wins the Worst Disease Award.



## Project

### Homeostasis Poster

#### Directions:

Students will make a poster illustrating a homeostasis process which was NOT in the presentation.