

Investigating Diseases of the Lungs

1. Question & Research Task

Listen to this [sound](#). Think about a time when you or someone you know had trouble breathing, maybe you were sick, maybe you fell off the jungle gym, maybe you were under water and had trouble getting to the surface in time or maybe you were exercising or running. What would it feel like to have trouble breathing all the time?

Activate your prior knowledge and build background knowledge about the [respiratory system](#).

There are many different [diseases that affect the lungs](#). In this lesson, you will work with a small group to investigate one of these diseases and answer the inquiry question below.

How is breathing impaired by respiratory ailments?

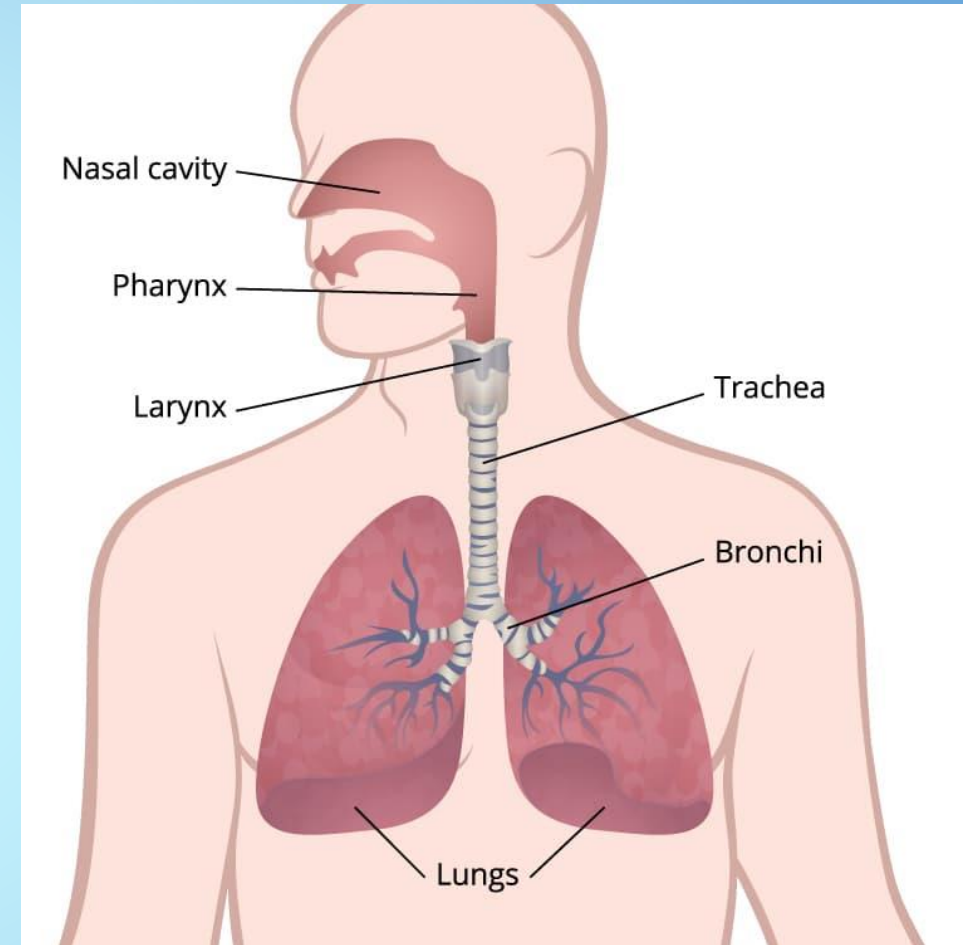


Image Source: Centers for Disease Control and Prevention

2. Information Sources

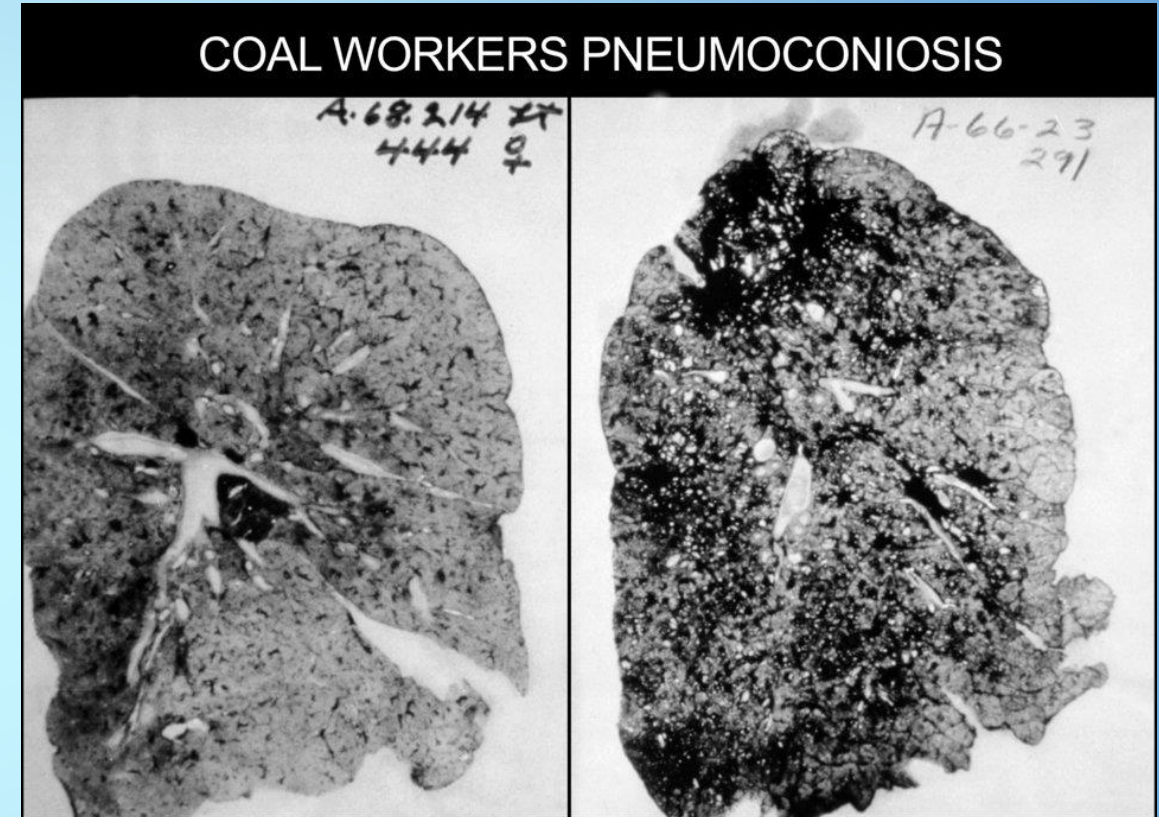
Use these resources to help you gather information about the disease you are investigating:

American Lung Association

1. [Asthma](#)
2. [COPD](#)
3. [Pneumonia](#)
4. [Pneumoconiosis](#) (cover Black Lung or CWP)
5. [Lung Cancer](#)
6. [Covid-19](#)

GALE InContext High School database *If you are prompted for a password, you can get it from BCPS Digital Content in the [Apps Portal](#)

1. [Asthma](#)
2. [Emphysema/COPD](#)
3. [Bronchitis](#) and [Pneumonia](#)
4. [Pneumoconiosis](#)
5. [Lung Cancer](#)
6. [Covid-19](#)



Images of lung tissue infected with black lung disease. A disease found primarily in older coal workers, black lung is characterized by thickening and scarring of lung tissue.

Image Source: Public Domain

3. Student Activity

First, select a disease to study. *If you are prompted for a username/password for these World Book database links, you can get those from BCPS Digital Content in the [Apps Portal](#)

1. [Asthma](#)
2. [Emphysema/COPD](#)
3. [Bronchitis/Pneumonia](#)
4. [Black Lung](#)
5. [Lung Cancer](#)
6. [COVID-19](#)

Use the resources on Slide 2 and this [chart](#) to make notes and answer questions. Include links to pictures and other resources you may want to use in a presentation to the class.

1. How do these diseases affect the lungs?
2. How is breathing impacted?
3. How does this disease impact your overall health?
4. What can be done to help prevent these diseases?



X-Ray showing cancer in the lungs
Image Source: Public Domain

4. Assessment Activity

How is breathing impaired by respiratory ailments?

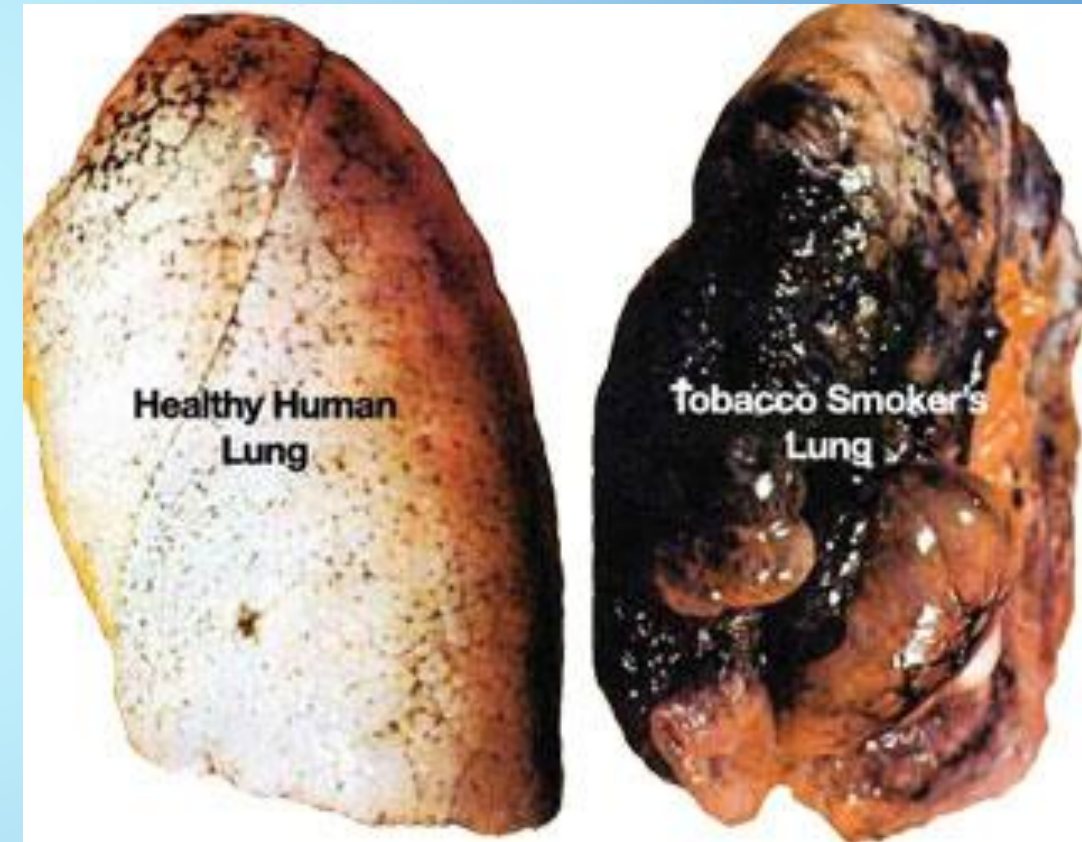
Create a [PSA](#) to inform your school community about the respiratory disease you researched. Your PSA must include a precise description of how breathing is impeded by the disease and should encourage people to keep their lungs healthy.

Choose a format and presentation tool as approved by your teacher, such as:

- Google Slides
- Microsoft PowerPoint or Sway

Use this [project description and rubric](#) to guide you.

As you view and listen to your classmates' presentations, think about and discuss which respiratory ailments might present the greatest risk or be most difficult to prevent.



A normal lung (left) and the lung of a cigarette smoker (right).
Image Source: Public Domain

5. Enrichment Activities



Image Source: Pixabay CC

Check out the following resources about other lung-related issues:

- Watch this video to learn more about [Asthma](#).
- Watch this video to learn about the [dangers of pneumonia](#).
- Visit the [American Cancer Society](#) to learn more about lung cancer and how to stay healthy.

Create an artistic rendering of a lung that has been damaged or restricted by pneumonia or asthma. Consider using poster paper, balloons, or other materials approved by a teacher.

6. Teacher Resources

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>
----------	----------	----------	----------	----------	----------

Grade 11/12 Science

Anatomy & Physiology Unit

Time Frame: One 90-minute class period

Notes to the teacher:

- Collaborate with your school library media specialist to plan and implement this lesson.
- Provide students with login information as needed to authenticate BCPS Digital Content. Login information is on the **BCPS Digital Content** page in the [Apps Portal](#).
- Consider using the [Schoolology Assignment App](#) feature to assign Google Docs for students to access, edit, and submit through Schoolology.

Learning Standards Alignment

Content Learning Standards

[Next Generation Science Standards](#)

MS-LS1-3. Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.

HS-LS1-2 Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms

[MCCRELA Standards for Grades 9-12](#)

Reading: 1. Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.

Writing: 7. Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.

[AASL Standards Framework for Learners](#) Inquire: Build new knowledge by inquiring, thinking critically, identifying problems, and developing strategies for solving problems.

Think: Learners display curiosity and initiative by:

I.A.2 Recalling prior and background knowledge as context for new meaning.

Create: Learners engage with new knowledge by following a process that includes:

I.B.1 Using evidence to investigate questions. I.B.3 Generating products that illustrate learning.

Share: Learners adapt, communicate, and exchange learning products with others in a cycle that includes:

I.C.1 Interacting with content presented by others.

Grow: Learners participate in an ongoing inquiry-based process by:

I.D.2 Engaging in sustained inquiry.

[P21 Framework: 21st Century Student Outcomes](#)

3. Information, Media & Technology Skills: Information Literacy: Access information efficiently and effectively; Use information accurately and creatively for the issue or problem at hand.

ICT Literacy: Use technology as a tool to research, organize, evaluate and communicate information.