(go to the file tape and make a copy)

Lungs and Cystic Fibrosis

The **purpose** of this lab is to explore the inheritance and manifestation of Mendelian in heritance. This will done by researching cystic fibrosis and alpha – 1 antitrypsin deficiency.

Once you are done go up to file, under download - download the file as a PDF. Submit your PDF by uploading it to the Moodle page. (Please do not submit a link to your google doc)

Part 1 – Lungs and alveoli

Use these links to answer the Part 1 questions.

• **Lung *function***

• How the lungs work **here**

• Alveoli, **the scientific definition**

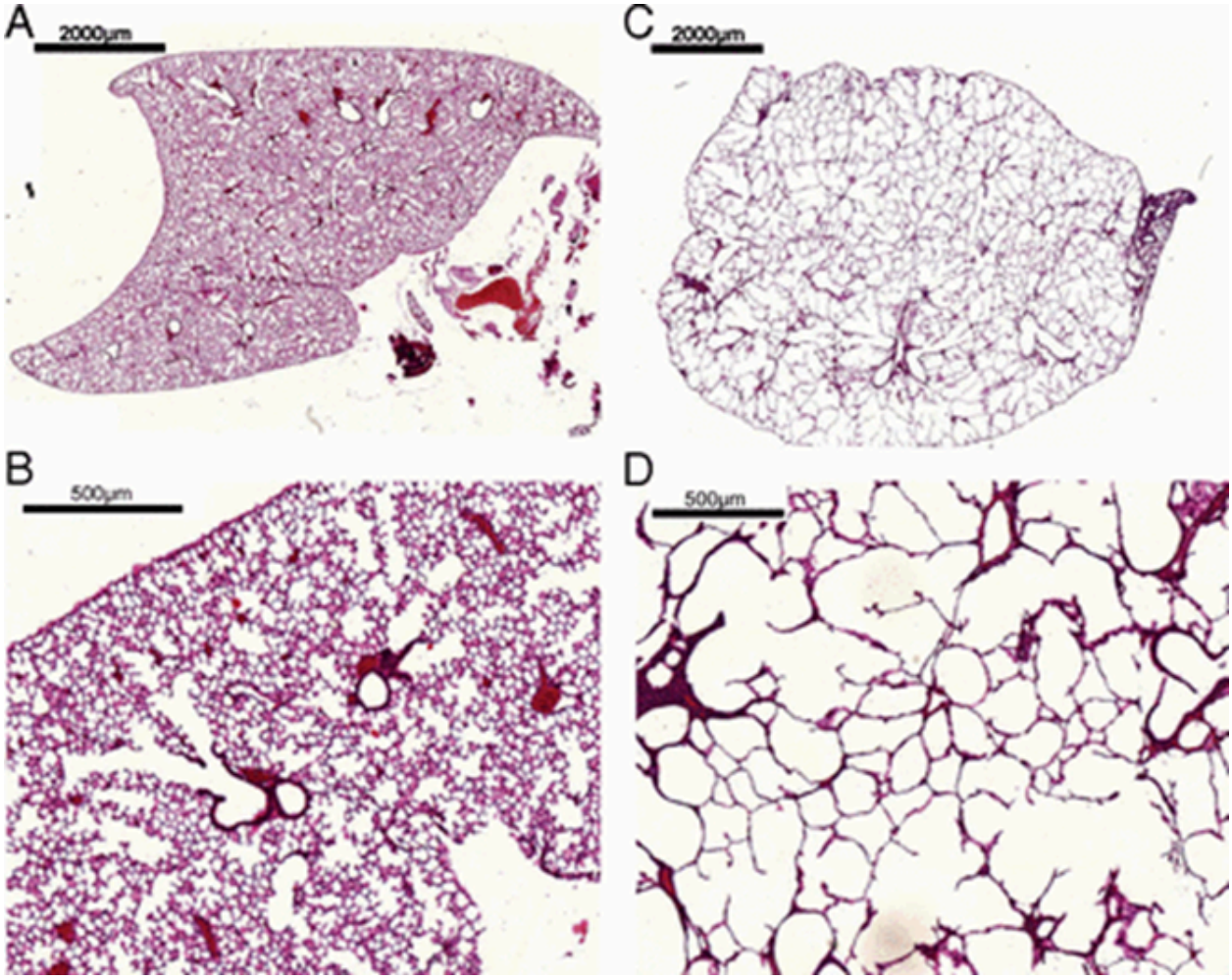
1. What is the function of the lungs?

2. What body system are the lungs part of?

3. The 2 parts of breathing are _____ and _____

4. Where, in the lungs does the exchange of CO2 and oxygen occur?

5. These 4 pictures are of alveoli under a microscope. One is normal alveoli (A and B) and the other is from a person with emphysema (C and D).



What do you see that is different between the two pictures?

6. What is the function of alveoli?

7. Why is it important for alveoli to have a large surface area?

8. Step by step, list the flow of air from the nose to the blood.

Part 2 – Cystic Fibrosis

Go to **this web site** and answer these questions:

Section: Go to Start Here go to a couple of the pages to answer the following questions (they all contain roughly the same info)

1. What is the ratio of carriers to affected individuals? Figure this out by dividing the number of carriers in the US by the number of individuals who have CF.

2. Which systems in the body are affected most by CF? What other systems are also affected?

3. Cells in which part of the body are affected?

4. Is CF stable or progressive?

5. What is the problem with having abnormally thick, sticky mucus in the lungs? (this can be found in the video about effects on the lungs)

6. What problem does the defective CF gene cause in the cell

7. Knowing what you know, how could this sentence be worded better? “All cystic fibrosis genes are life threatening?”

8. In which ethnicity is CF most common? And in whom is it less common?

9. Does a person with CF have a normal appearance?

10. Do carriers of CF have symptoms?

11. What environmental factors could play a role in how sick a person with CF is and / or how long a person with CF lives?

Part 3 – Answer these questions.

Genotypes:

1. If we use f to represent the recessive gene for Cystic Fibrosis, what is the genotype of individuals that do not have Cystic Fibrosis? _____

2. What is the genotype of a carrier? _____

3. What is the genotype of an individual that has Cystic Fibrosis? _____

Probability:

4. Do you and your spouse need to be concerned about the possibility of having a child with Cystic Fibrosis if neither of you carry the gene for the disease?_____ Explain.

5. Do you need to be concerned if just one of you carries the gene? _____ Explain.

6. Do you need to be concerned if both of you carry the gene? _____ Explain.

7. What is the chance of having a child with CF if both are carriers? _____

Just an FYI: Currently it is recommended that ALL couples in the United States have CF carrier testing MADE AVAILABLE to them during or before pregnancy. (this is by the NIH, the American College of Obstetrics and Gynecology and the American College of Medical Genetics).