

# Case Studies in Microscopy

## The Fatal Flu

The purpose of this activity is for you to use the information presented in the results and the references to determine the cause of an outbreak. Think about the information, and answer these questions as you go through case.

The case study can be found by going to

<http://instruct1.cit.cornell.edu/courses/biomi290/microscopycases/>

## The Disease

1) What types of pathogens could be responsible for this “severe acute respiratory syndrome”?

## The Gram Stain Results

2) Briefly discuss the Gram stain technique. What does it tell you? What do the Gram stain results indicate in this case? That is, what pathogens can you rule out as a result of the Gram stain results?

NOTE: it may help to fill in the test results below.

	Patient 1	Patient 2	Patient 3	Patient 4
Sputum sample				

## The DFA Results

3) Briefly discuss the direct fluorescent-antibody assay (DFA) technique. What does it tell you? What results did you get in this case? What do these results indicate?

NOTE: it may help to fill in the test results below.

	Human RSV	Rhinovirus	Influenza	Human adenovirus
Patient 1				
Patient 2				
Patient 3				
Patient 4				

## The Electron Microscopy Results

4) Explain what had to be done to get the electron micrographs--why did they first grow cells from different cell culture lines, then inoculate with sputum samples? In this case, what do the EM results indicate?

NOTE: it may help to fill in the test results below.

	Cell culture line A	Cell culture line B	Cell culture line C
Patient 1			
Patient 2			
Patient 3			
Patient 4			

## Your Conclusion

5) Explicitly state what you think is causing the outbreak. Your argument must refer to your results and include information from the references as needed. Why didn't the health community expect these results? What other tests would you do to strengthen your diagnosis?