

# **Pathogen Panic**

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### **Abstract:**

The year is 3037 and humankind has long since left Earth in search of an Earth-like replacement. Unfortunately, a newly discovered container was opened and resulted in the unexpected release of airborne pathogens from Earth. Pathogen has spread among the crew and they are becoming sick at an alarming rate.

This class exercise is a simulation that stresses the need for early detection and containment of deadly pathogens. Students will make critical decisions and complete tasks to isolate and culture the pathogen. Then, they will analyze virus structure to determine which body systems are being attacked. Ultimately, students will be forced to follow biotechnical methods in a race against time to save the infected crew or become humanities final chapter.

The simulated components involve first, pathogen detection using sentinel chickens. As an example of simulation, rubber chickens will be used and one will be painted with a fluorescent paint only detectable with a black light. The students that get the tainted chicken become quarantined subjects. At this point, students will be given detailed instructions to follow. In groups of four, they will work cooperatively to complete additional simulated procedures on their instruction sheets. Every 5 minutes 2 students will be randomly added to those quarantined. Quarantined students will be given a task that results in one student being eliminated in other words listed as a casualty.

The instruction sheet will contain simulated versions of culturing pathogen, analyzing virus structure and altering the virus for human immunity. All activities will be conducted using facemasks, rubber gloves and glasses. Students will be expected to maintain a sterile work area and work efficiently through the simulated tasks.

The second phase of this lesson will link the simulated activities with real world application and present research. Students will be shown a presentation followed up with questions related to biotechnology and its processes.

### **Mission Statement:**

This activity is designed to promote awareness of the biotechnology field and the importance of early detection and containment of pathogen. Efficient processes in coordination with a population knowledgeable in biotechnology provide for our best defense against a growing number of emerging pathogens.

### **Teaching Unit:**

This lesson is applicable to multiple science classes: Earth Space, Biology, Anatomy & Physiology and Chemistry. The components are designed to engage students and involve critical thinking at multiple experience levels. It will involve two fifty-minute class periods. Extension activities may be added to provide specific knowledge about an individual process.

### **Expected Outcomes:**

Students will discover the importance of teamwork, early detection and containment of emerging pathogens. The processes of virus isolation, culturing and timely decision-making will be introduced. In addition, students will discover that different virus structures target specific organ systems. Overall, the goal is to promote awareness and importance of biotechnology.

### **Expertise of PI:**

Emerging pathogen knowledge gained at the University of Florida's ICORE program, experience involving aseptic techniques from the US Navy school of Dental Technologies, management and production experience, graphic design and research based practices in the classroom offer a unique combination of elements that will allow me to meet and exceed the student expected outcomes. My contributions involve the design of an unforgettable classroom experience based on facts about emerging pathogens and the critical need to contain them.

### **Sited Reference Material:**

ICORE information  
TBD

### **Funds Requested**

The simulated aspects of this project will reduce overall cost. The project will require basic supplies indicated on the following list other items still to be determined as of June 26, 2008:

Masks, gloves, plastic trays, food coloring, fluorescent lights, Card Stock, Paper, fluorescent paint, Markers, Plastic pipettes, Plastic over lays and printing supplies. . .

Current estimation for materials, 130 students:        \$275.00