



## Solve the mystery of how a virus spread through a restaurant

Two patients stumble into a hospital with symptoms associated with a newly emerging virus. Doctors diagnose the patients and find one is infected with the novel virus. This person had been at a local restaurant earlier that day, so public health officials track down others who were also at the restaurant to determine how the virus spreads. Based on published viral transmission case studies, this hands-on lab activity puts your students into the roles of an emergency room (ER) doctor, medical laboratory scientist, epidemiologist, and public health official as they analyze patient samples and use patient information to determine how a novel virus strain spread through a restaurant.

### CONCEPTS

- *Chain of Infection*
- *Virology*
- *Molecular Diagnostics*
- *PCR*
- *Reverse-Transcription PCR*
- *Gel Electrophoresis*

### SKILLS

- *Agarose Gel Electrophoresis*
- *Data Collection and Analysis*

### Your Choice of Virus and Transmission Scenario

Explore the chain of infection and mode of transmission of your choice of either a novel norovirus or a novel coronavirus. Once you've chosen the virus, choose one of two possible transmission scenarios for a total of four different activity options.

### Career Highlights

Use real-world scenarios to explore viral biology, pathophysiology, molecular diagnostic techniques, and epidemiology. Career highlights introduce students to a variety of opportunities within the health and life sciences.

### No PCR Required

Use the included pre-amplified DNA samples to teach diagnostic PCR applications without a thermal cycler. Analyze simulated samples by agarose gel electrophoresis, compile class data, and then analyze infection patterns and other patient information to deduce the mode of virus transmission.

## Activities include

- Pre-lab activities:
  - Diagnose hypothetical patients based on their symptoms
  - Explore virus structure and pathogenesis
  - Understand the basis for reverse-transcription diagnostic tests
- Laboratory investigation — perform gel electrophoresis and analysis of pre-amplified restaurant patron and staff samples
- Post-lab activity — analyze class and restaurant patron/staff details to determine the mode of transmission
- Optional activity (coronavirus) — consider what might need to be done to prevent further spread of the virus

## Kit content supports 8 workstations

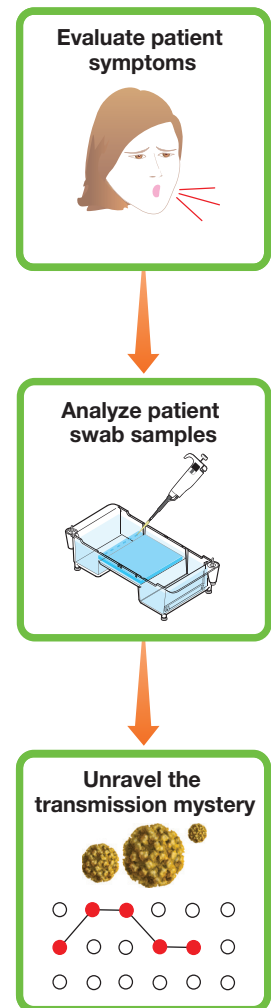
- Pre-amplified DNA samples
- Molecular weight ruler
- EZ Micro Test Tubes
- Orange G loading dye, 5x
- Some configurations include electrophoresis reagents and either Fast Blast DNA Stain or UView 6x Loading Dye and Stain

## Required accessories not included in kit

- Adjustable-volume micropipets and tips (20–200  $\mu$ l)
- Adjustable-volume (2–20  $\mu$ l) or 10  $\mu$ l fixed-volume micropipet/s and tips
- Horizontal gel electrophoresis chambers and gel staining trays
- Power supply
- UV transilluminator (if using UView 6x Loading Dye and Stain)
- Microcentrifuge racks, marking pens, and calculators

## Timeline

- Finish all activities in two to four 45-minute class periods
- Complete the electrophoresis step in 10 minutes with our Fast DNA Gel Protocol (see bulletin 5396)



## Ordering Information

Catalog #	Description
17008261EDU	<b>Virus Disease Detection and Transmission Kit</b>
17008251EDU	<b>Virus Disease Detection and Transmission Kit plus Fast Blast Electrophoresis Reagents</b>
17008241EDU	<b>Virus Disease Detection and Transmission Kit plus UView Electrophoresis Reagents</b>

Call **1-800-4BIORAD** (1-800-424-6723) or visit [bio-rad.com/VDTKit](http://bio-rad.com/VDTKit) for more information and classroom resources.

BIO-RAD is a trademark of Bio-Rad Laboratories, Inc. All trademarks used herein are the property of their respective owner. © 2023 Bio-Rad Laboratories, Inc.