SI Microbiology - Full Discipline Demo

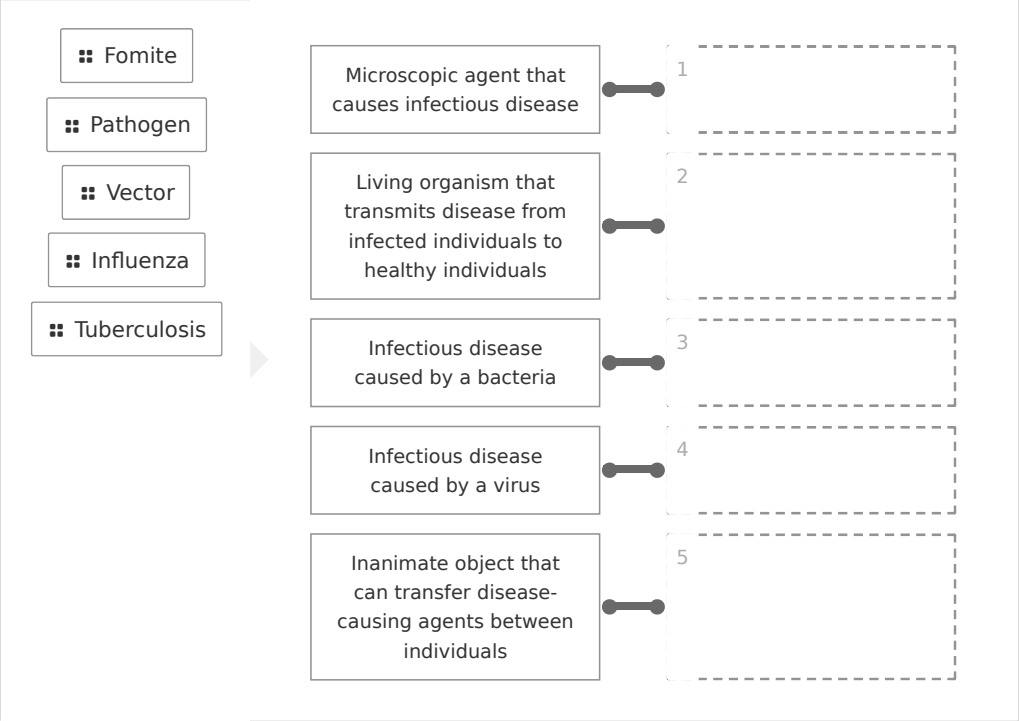
Fomite Transmission

Final Report - Answer Guide

Institution	Science Interactive University
Session	SI Microbiology - Full Discipline Demo
Course	SI Microbiology - Full Discipline Demo
Instructor	Sales SI Demo

Test Your Knowledge

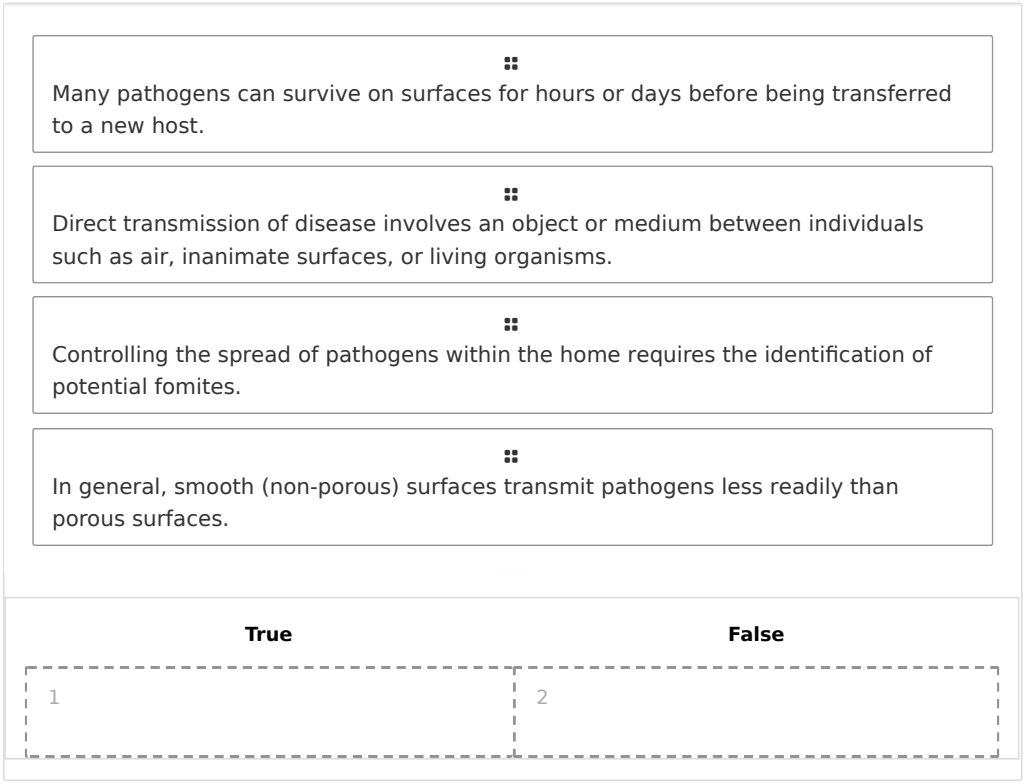
Match each term with the best description.



Correct answers:

1 Pathogen 2 Vector 3 Tuberculosis 4 Influenza 5 Fomite

Categorize each statement as true or false.



Correct answers:

1

Controlling the spread of pathogens within the home requires the identification of potential fomites.

Many pathogens can survive on surfaces for hours or days before being transferred to a new host.

2

In general, smooth (non-porous) surfaces transmit pathogens less readily than porous surfaces.

Direct transmission of disease involves an object or medium between individuals such as air, inanimate surfaces, or living organisms.

Exploration

Examples of pathogens include many types of _____.

- bacteria
- fungi
- viruses
- All of the above ✔

Fomites become contaminated when exposed to the bodily secretions of an infected individual.

- True ✔
- False

A _____ is an example of a potential household fomite.

- doorknob
- hand towel
- fork
- All of the above ✔

Exercise 1

How do fomites contribute to the spread of disease?

Fomites are inanimate objects that harbor pathogens. Fomites become contaminated through contact with bodily fluids from infected individuals or when contacted by pathogens from other sources, such as contaminated food. Fomites transmit disease to healthy individuals when they touch or otherwise contact the infected surface.

Based on the results recorded in Data Table 1 and Photo 1, which surface is most likely to harbor pathogens? How does this compare to your prediction recorded in Panel 1?

Student answers will vary based on surfaces and overall cleanliness of locations. Students should conclude that surfaces with the greatest diversity and number of microbes will have the highest risk of harboring pathogens. Students should find non-porous surfaces more readily transmit microbes than porous surfaces, which absorb and trap potential pathogens.

How will the results from this exercise influence your daily practices around your home?

Student answers will vary but should include improved cleaning/disinfection of those surfaces producing high levels of microbial growth in conjunction with increased hand washing practices.

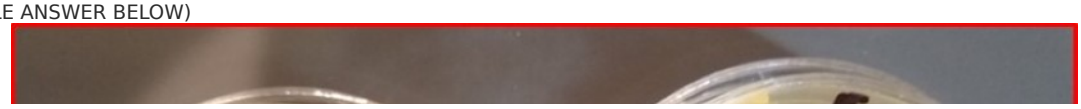
Data Table 1: Growth Results for Inoculated Plates
(SAMPLE ANSWER BELOW)

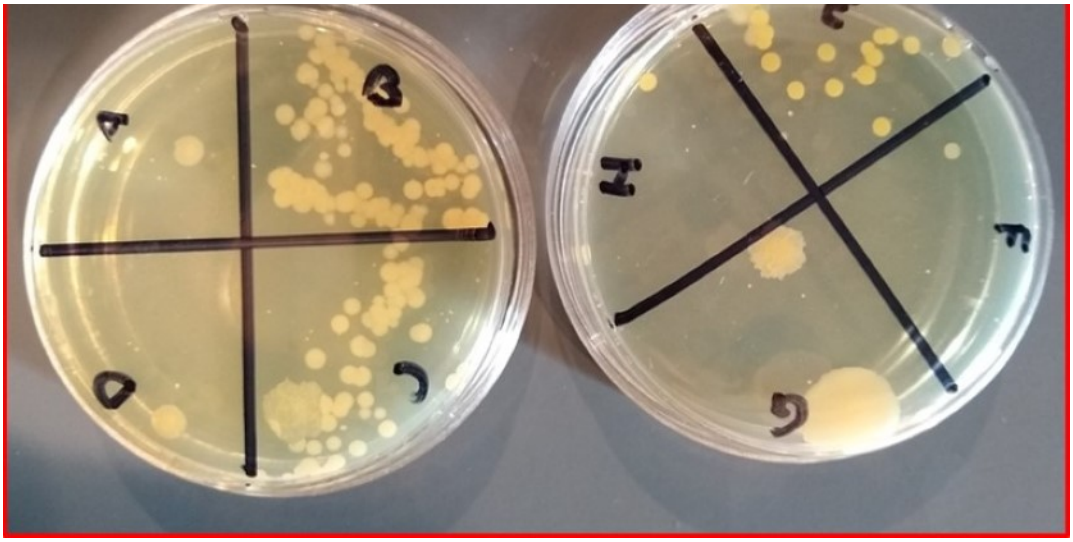
Plate Section	Surface	Types of Colonies	Total Colonies
A	Bathroom faucet	3	6
B	Toilet seat	2	37
C	Cell phone	4	21
D	Door handle	2	5
E	Kitchen counter	3	16
F	Computer mouse	2	5
G	TV remote	3	6
H	Coffee maker knob	1	2

Panel 1: Prediction of Results
(SAMPLE ANSWER BELOW)

Student answers will vary based on the locations selected and their opinion of how many microbes each surface will harbor.

Photo 1: Developed Plates
(SAMPLE ANSWER BELOW)





Exercise 2

How was the pathogen transmitted in this exercise? Reference the definitions of direct and indirect transmission in your explanation.

The pathogen in this exercise was transmitted indirectly from the infected individual to others at the luncheon via the bottle opening, which was compromised when the individual tasted the beverage from the bottle. Direct transmission is the passing of a pathogen immediately from one person to another via direct contact, such as a handshake or by kissing. Indirect transmission of a pathogen involves an object or medium between individuals such as air, inanimate surfaces, or living organisms.

How could the spread of the pathogen in this exercise have been reduced or eliminated by the actions of the individuals at the luncheon?

The spread of the pathogen could have been reduced or eliminated by individuals refusing to share drinks and by the initial infected individual not tasting the beverage directly from the bottle.

Data Table 2: Spread of Disease
(SAMPLE ANSWER BELOW)

Number of individuals attending luncheon with an infection	1
Total number of individuals attending luncheon	8
Percent of individuals with an infection	12.5
Fomite	Soda bottle opening
Number of infected individuals at end of luncheon	6
Percent of infected individuals at end of luncheon	75.0

Competency Review

A ____ is a disruption of the normal state of an animal or plant that impairs bodily structure or function that is not related to an accident or natural aging.

- pathogen
- fomite
- vector
- disease ✔

Viruses are an example of a ____ that causes infectious disease.

- parasite
- pathogen ✔
- vector
- fomite

Indirect transmission of contagious disease involves ____.

- water droplets
- vectors
- fomites
- All of the above ✔

A ____ is an example of a potential porous household fomite that can trap and hold pathogens.

- doorknob
- hand towel ✔
- countertop
- spoon

Potential fomite sources can be cleaned with disinfectants to reduce the number of pathogens they harbor.

- [x] True
- [ ] False

Microbes are collected from potential fomite sources using a moistened _____.

- [x] sterile swab
- [ ] sterile pipet
- [ ] inoculating loop
- [ ] inoculating needle

A collection surface that results in both numerous and diverse plated microbe colonies is a likely household fomite location.

- [x] True
- [ ] False

The sharing of beverages at a small gathering can lead to the indirect transmission of contagious disease to a majority of the attendees.

- [x] True
- [ ] False

Extension Questions

A student wants to host a small gathering of friends in their apartment and is concerned that all guests remain healthy after the gathering. Apply your knowledge of fomite transmission to suggest practices the student should follow before, during, and after the gathering to limit the spread of contagious disease. (SAMPLE ANSWER BELOW)

Before the party, the student should identify and disinfect all potential fomite sources in the apartment. During the gathering, the student should encourage the guests to avoid physical contact, wash their hands, and abstain from practices such as sharing food and drink. After the gathering, the student should again disinfect all potential fomite sources in the apartment.