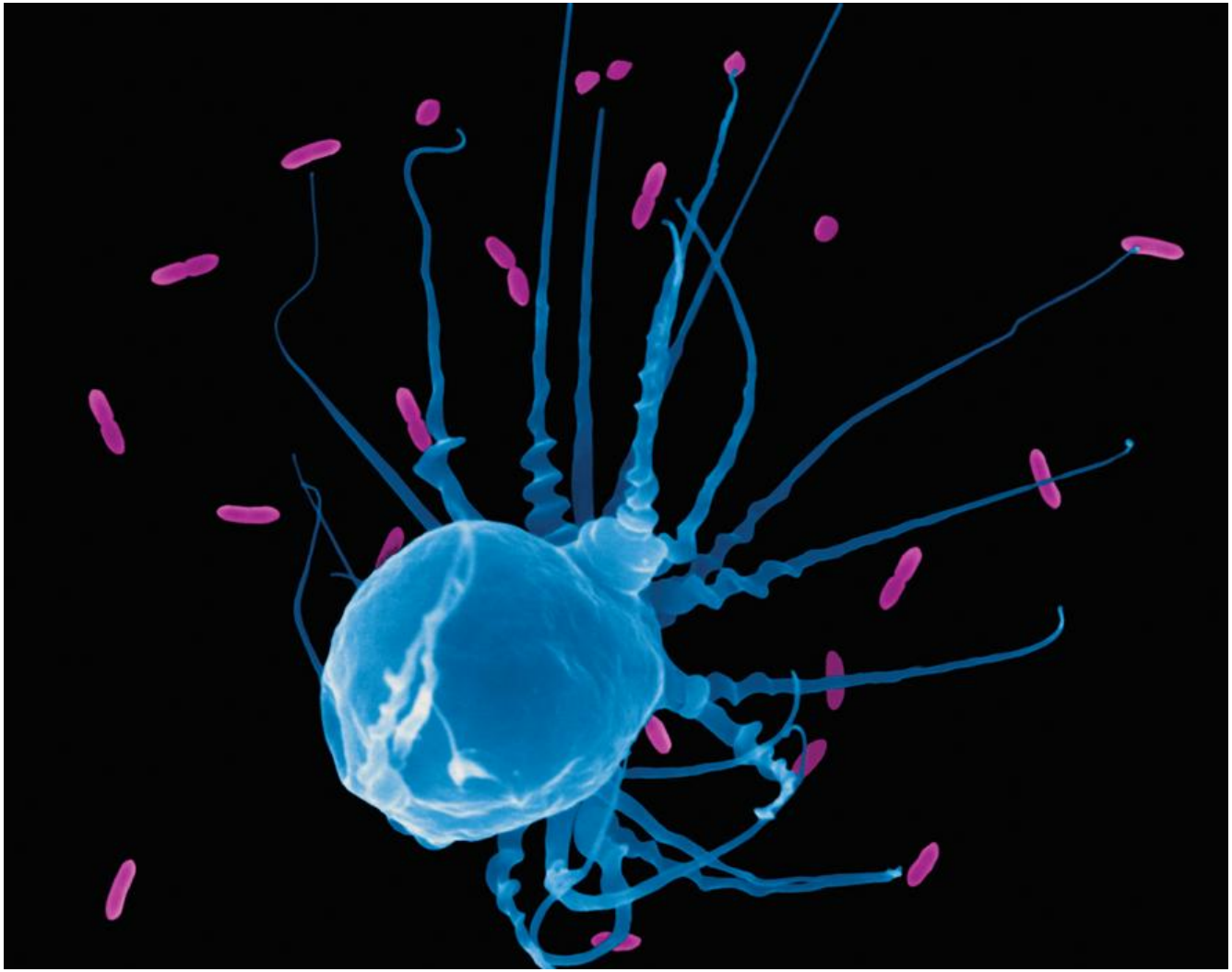
31.1 Pathogens and Human Illness

KEY CONCEPT

Germs cause many diseases in humans.



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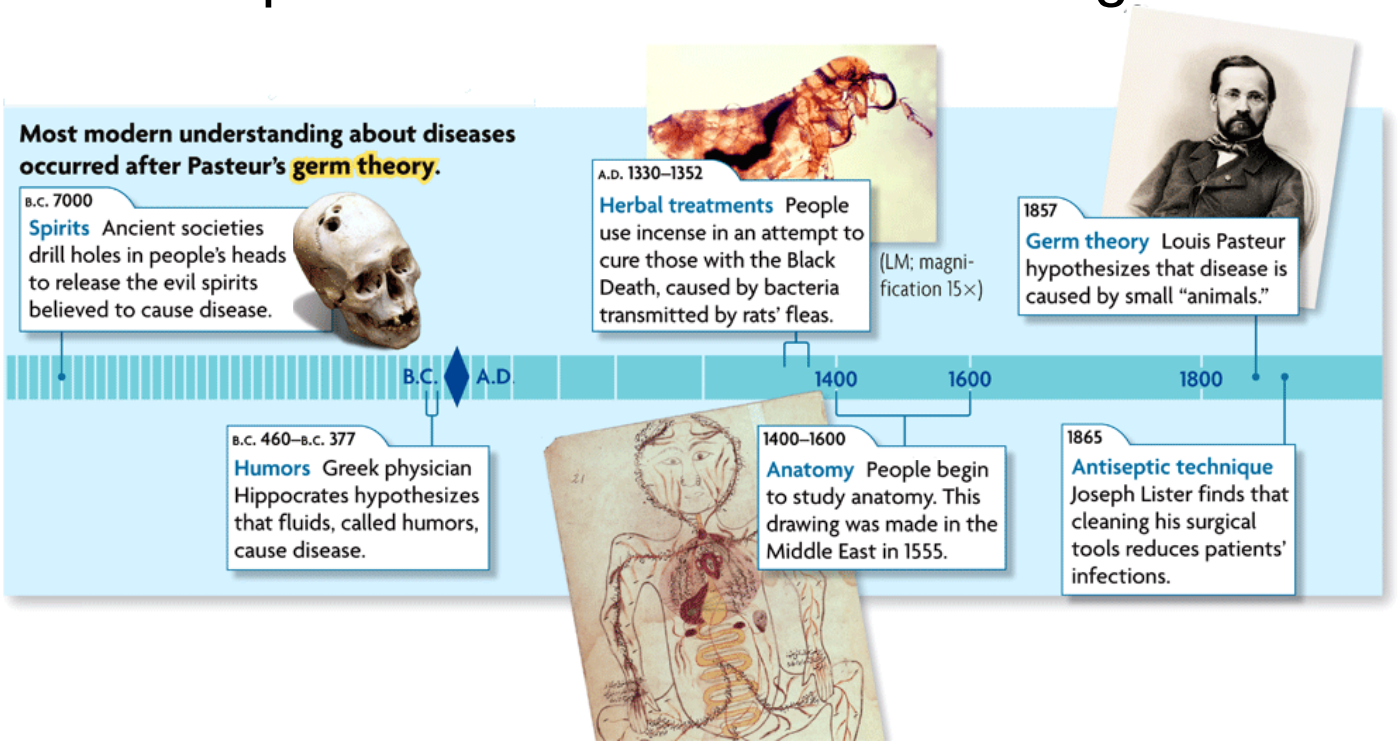
- **Germ theory states that microscopic particles cause certain diseases.**
  - Germ theory proposes that microorganisms cause diseases.
    - proposed by Louis Pasteur
    - led to rapid advances in understanding disease



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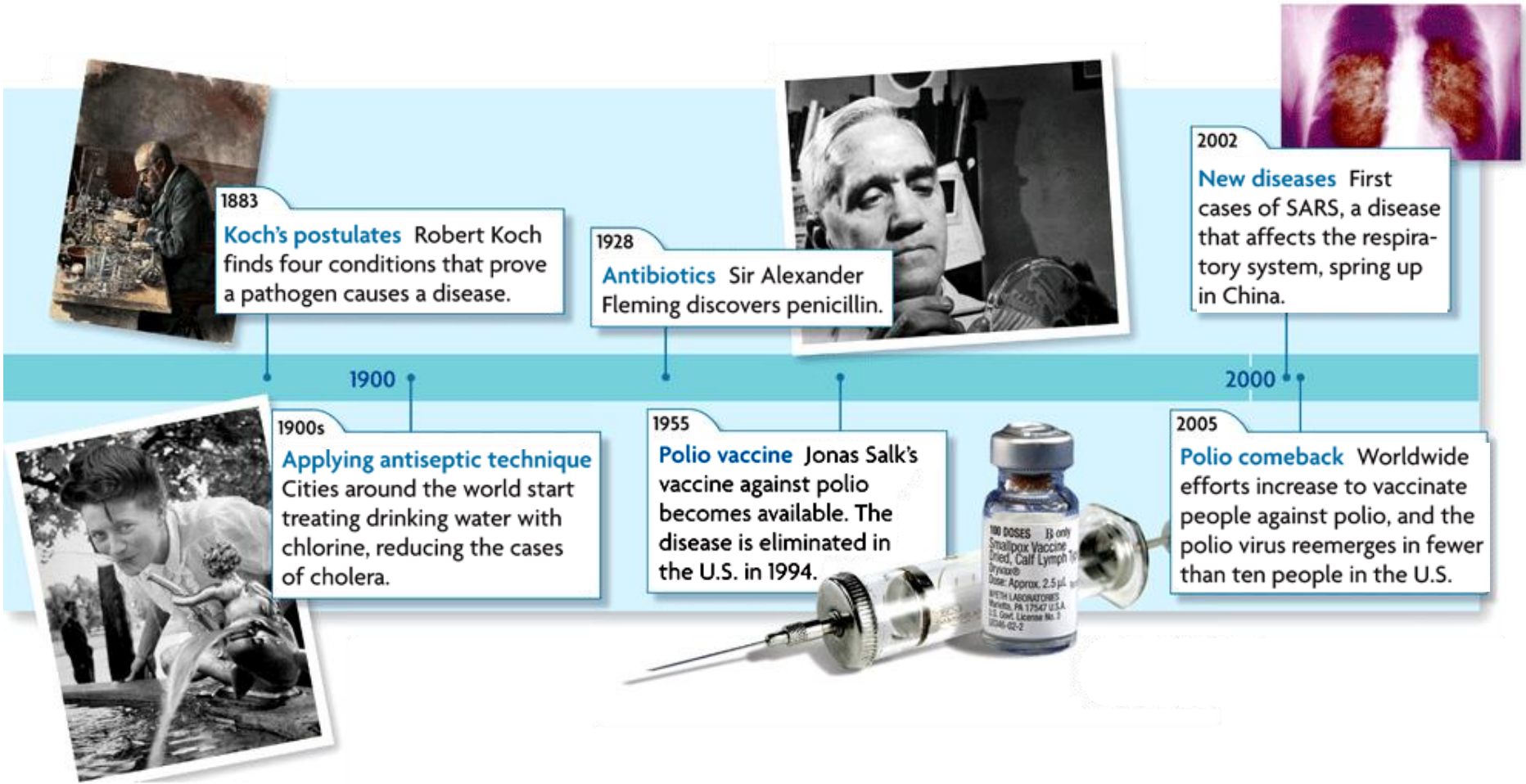
- Koch's postulates support the theory.
- Disease-causing agents are called pathogens.



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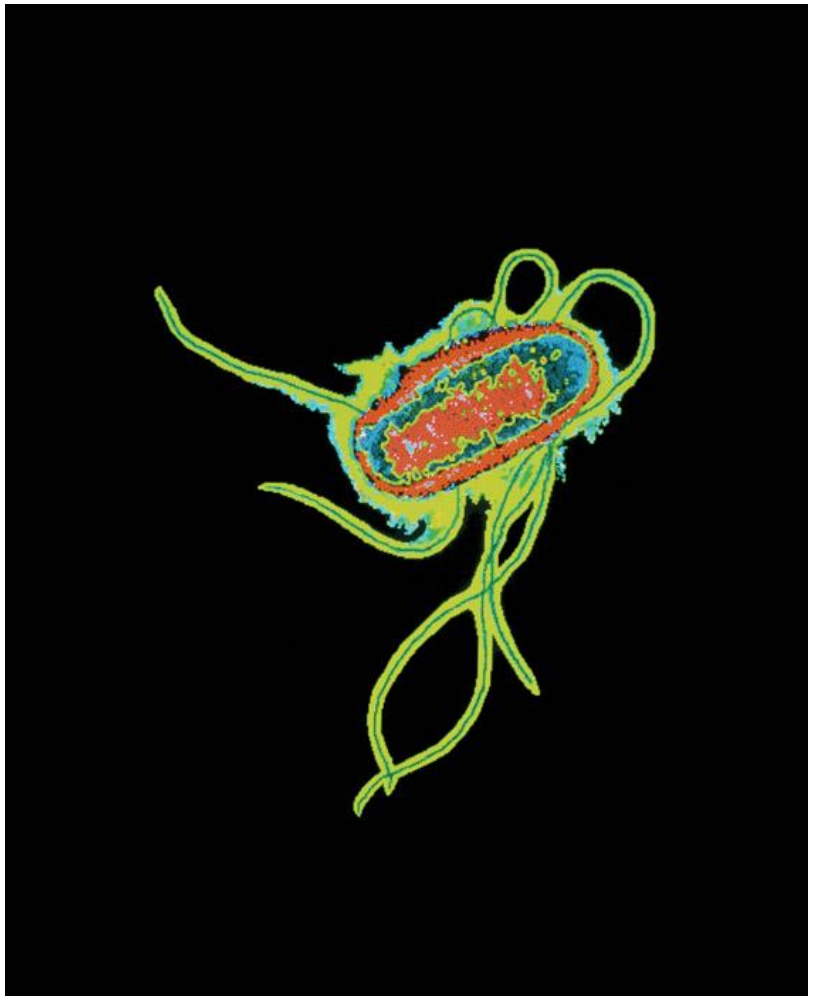
There are different types of pathogens.

- Bacteria are single-celled organisms.
  - cause illness by destroying cells
  - release toxic chemicals



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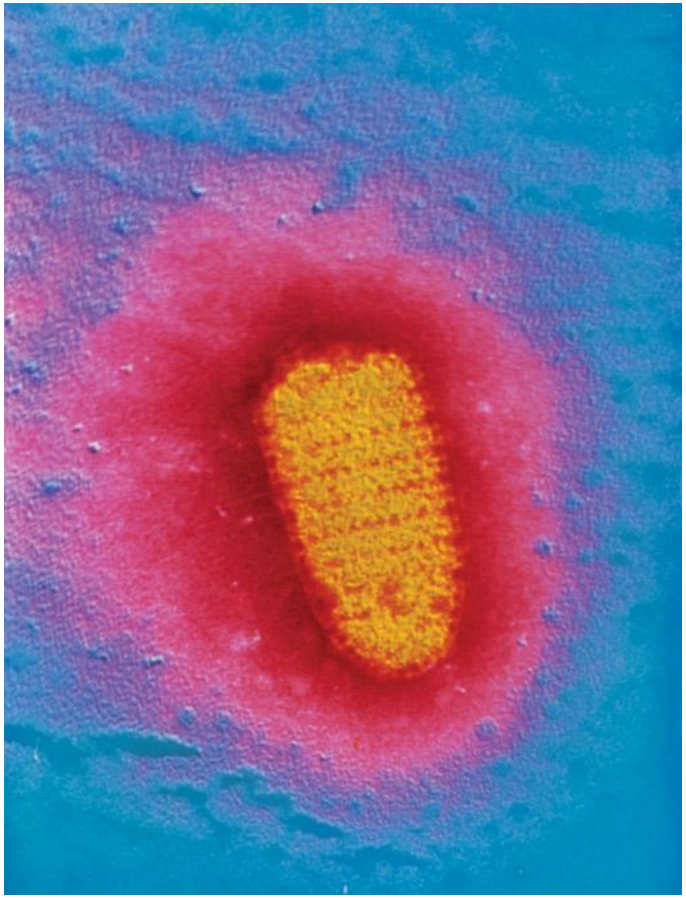
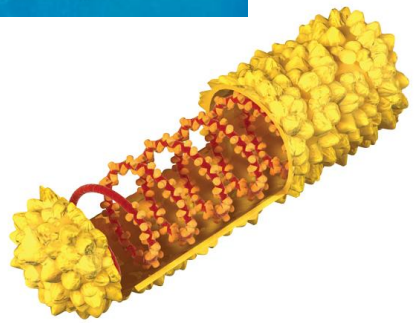
- Viruses are genetic material surrounded by a protein coat.
  - force host cells to make more viruses
  - very small





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- Fungi can be multicellular or single-celled.
  - take nutrients from host cells
  - occur in warm and damp places

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- Protozoa are single-celled organisms.
  - use host cells to complete their life cycles
  - take nutrients from host cell

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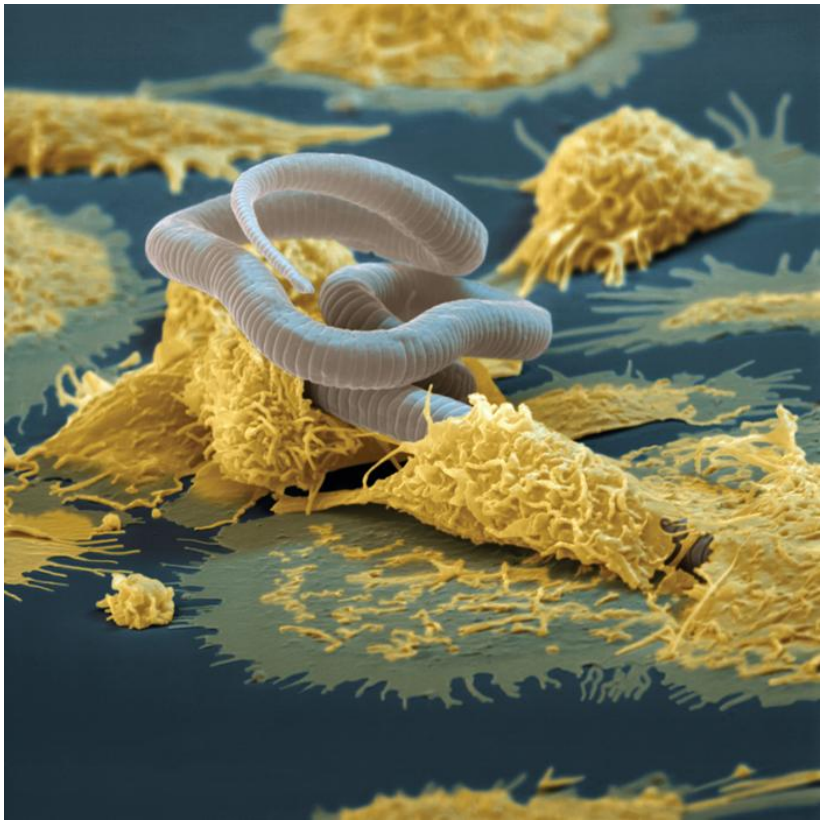
- Parasites are multicellular organisms.
  - grow and feed on a host
  - possibly kill the host



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- Different pathogen cause common infectious diseases.

DISEASE	PATHOGEN TYPE	HOW IT SPREADS	AFFECTED BODY SYSTEMS	DEATHS ANNUALLY
HIV	virus	body fluids	immune	3,100,000
Pneumonia	virus, bacteria	airborne	respiratory	2,000,000
Tuberculosis	bacteria	airborne	respiratory, digestive	1,800,000
Malaria	protozoa	mosquito bite	digestive, circulatory, muscular	1,000,000
Hepatitis B	virus	contaminated food/water	digestive, immune	1,000,000
Measles	virus	airborne	respiratory, nervous	500,000
Influenza	virus	airborne, direct contact	respiratory	400,000

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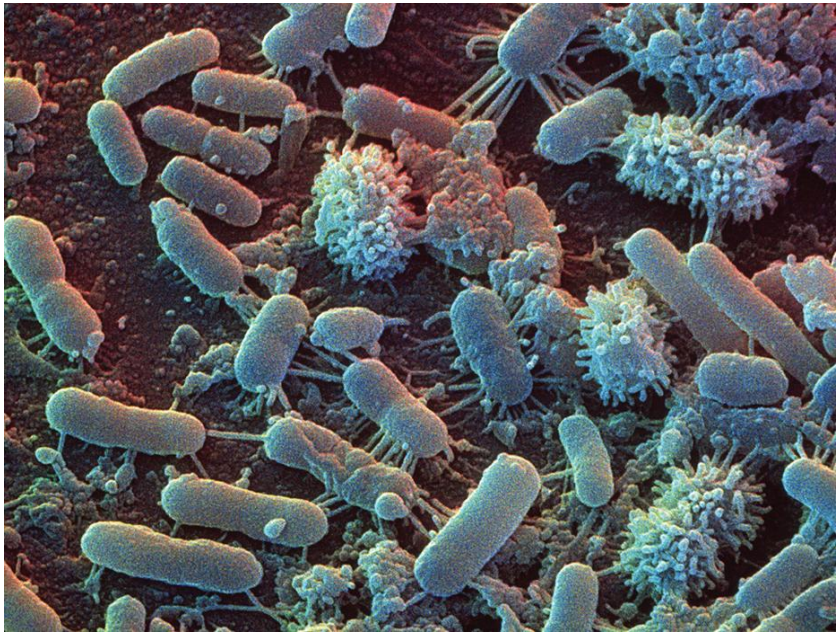
Pathogens can enter the body in different ways.

- Pathogens can be transferred by direct or indirect contact.
- Indirect contact does not require touching an infected individual.
  - touching an infected surface
  - breathing in infected air



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- Vectors carry a pathogen and transmit it into healthy cells.
- Direct contact requires touching an infected individual. Includes:
  - kissing
  - sexual intercourse
  - hand shaking