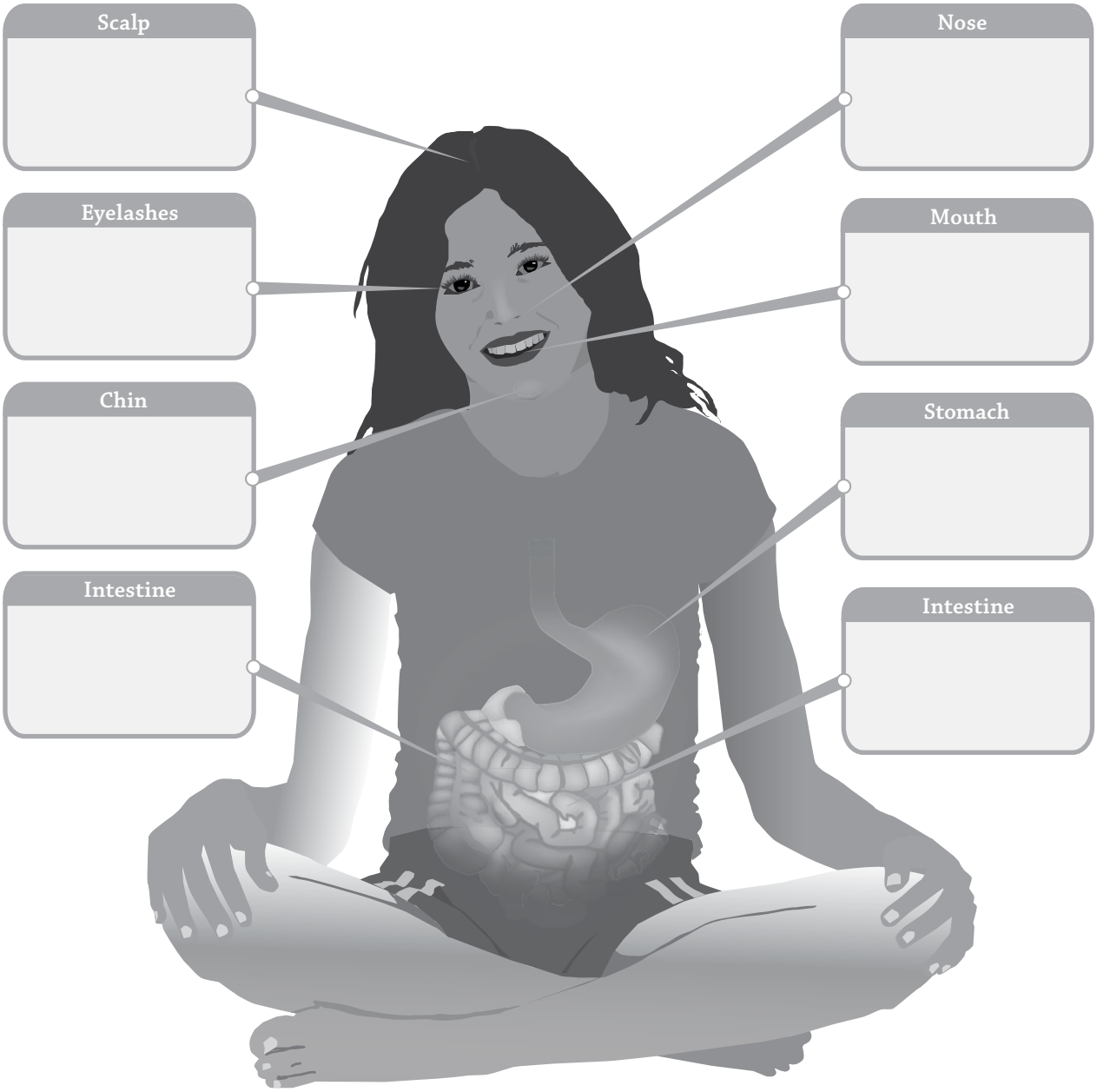
NAME _____ DATE _____

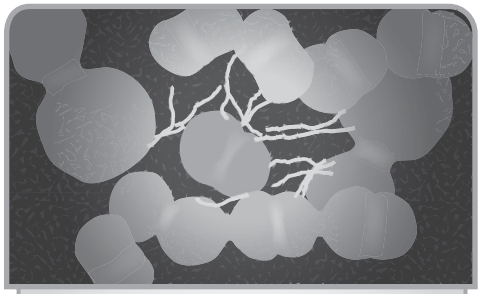


# Symbiotic Microbes

Entire ecosystems of microbes thrive inside the human gut, mouth, airways, and even on our skin. Like organisms in the earth's ecosystems, our body's microbes have symbiotic relationships with us and with each other. And because these organisms depend on one another, disrupting one microbe can affect the entire ecosystem.

Read about some of these microbes, look for clues, and match them to the area of the body where they might thrive. Once you have made your choice, write the name of the microbe on the human body diagram.



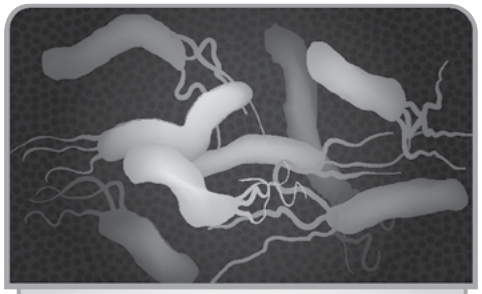


Staphylococcus epidermidis (bacterium)

S. epidermidis releases chemicals that block other microbes, such as S. Aureas, from growing. This microbe thrives in and around a sneezy breezy area.

Symbiosis: Commensalism

This organism is normally harmless but some strains can infect skin wounds or incisions.

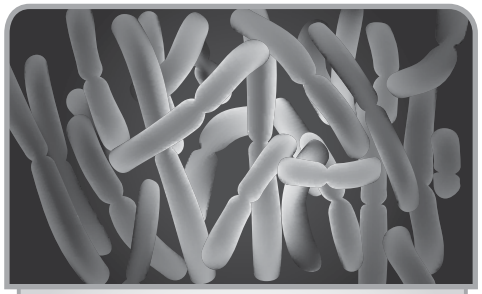


Helicobacter pylori (bacterium)

Children colonized with H. pylori are less likely than the uncolonized to have allergies and asthma, suggesting that this bacterium may help train the immune system. It lives on nutrients in the food we eat, and it avoids competition by surviving in an extremely acidic place.

Symbiosis: Mutualism

In about 15% of colonized adults, H. pylori is associated with ulcers and cancers.

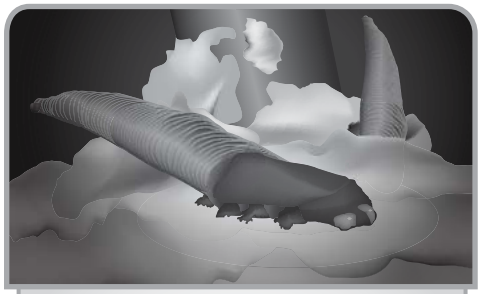


Propionibacterium acnes (bacterium)

P. acnes breaks down oils that the body makes, turning its environments slightly acidic to inhibit the growht of pathogens.

Symbiosis: Mutualism

P. acnes is most often harmless, but it can infect hair follicles, causing acne.



Demodex folliculitis (arthropod)

Claws and scales help keep D. folliculitis anchored in places where they might be blinked away. Sharp mouth parts puncture cells and suck out their innards.

Symbiosis: Commensalism

Most people unknowingly host these microbes, which can cause inflammation in some.

Malassezia globosa (fungus)

This single-celled fungus can't make its own fats, so it harvest what it needs to survive from the body's greasiest places.

Symbiosis: Commensalism

In some people, the byproducts that M. globosa makes as it breaks down fats can lead to dandruff.

Dental Plaque (mixed bacterial spp)

A mixture of symbiotic bacteria builds its own mini-ecosystem, a biofilm that is resistant to invasion by other microbes. Sticky, sweet foods are especially nourishing to this ecosystem.

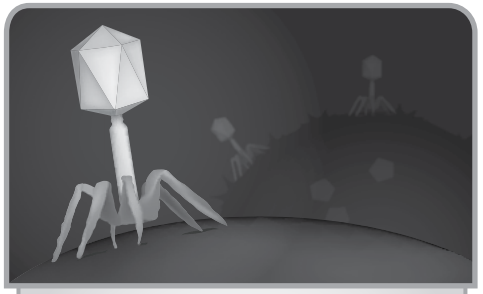
Symbiosis: Commensalism, with good dental hygeine.

Some species in this ecosystem turn sugars into acids, leading to cavities.

Bifidobacterium spp. (many bacterial species)

Bifidobacteria live off carbohydrates that we can't digest. They make several vitamins (including K, B12, and folate) that we can't make on our own. Some of these vitamins strengthen our immune system.

Symbiosis: Mutualism



Bacteriophage (viruses)

Bacteriophage density is greatest in the mucosal lining of an organ that is wet, warm, and full of post-digestion food remnants. These viruses cannot infect our cells, but they do infect and kill bacteria. They keep bacterial populations in balance, and they attack some that might otherwise make us sick.

Symbiosis: Mutualism