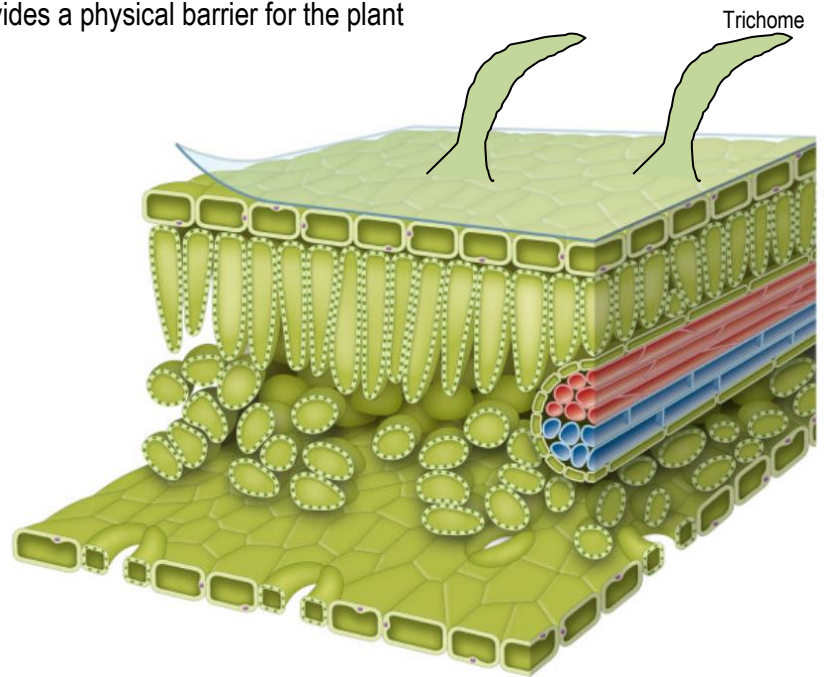


CONCEPT: PATHOGEN DEFENSES

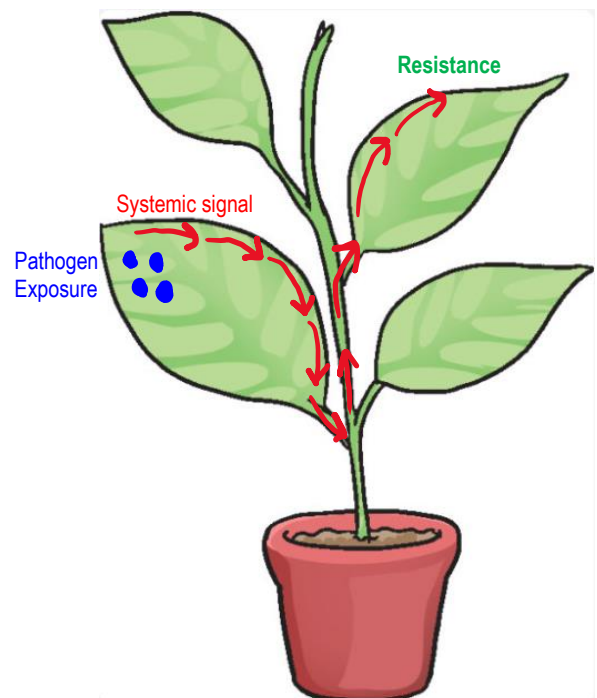
- **Pathogens** – disease-causing agents like bacteria, viruses, and fungi
- Epidermis is the first line of defense; the cuticle provides a physical barrier for the plant

EXAMPLE:



- **Inducible defenses** – responses to attacks by pathogens
- Pathogen-associated molecular patterns – molecular patterns unique to a pathogen that immune system may recognize
- **Hypersensitive response** – rapid immune response that leads to cell death at the site of infection to stop its spread
- **Systemic acquired resistance** – plant-wide response to pathogen that occurs in response to earlier infection
 - Methyl salicylate is produced at infection site and carried by phloem, converted salicylic acid for signaling

EXAMPLE:



CONCEPT: HERBIVORE DEFENSES

- Thorns, spines, and trichomes are external features used to ward off herbivores
- **Secondary metabolites** – chemicals produced by plants to ward off herbivores
 - Effects include repellent smells, poisoning, and altering the nervous system

EXAMPLE:



- **Proteinase inhibitors** – block digestive enzymes found in animal saliva and stomachs
 - **Systemin** – hormone wound-signal that leads to the production of proteinase inhibitors
- Plants give off a chemical attractant to wasps when being eaten by caterpillars
 - **Parasitoid** – organism that lives freely as an adult, but is parasitic as a larva

EXAMPLE:

