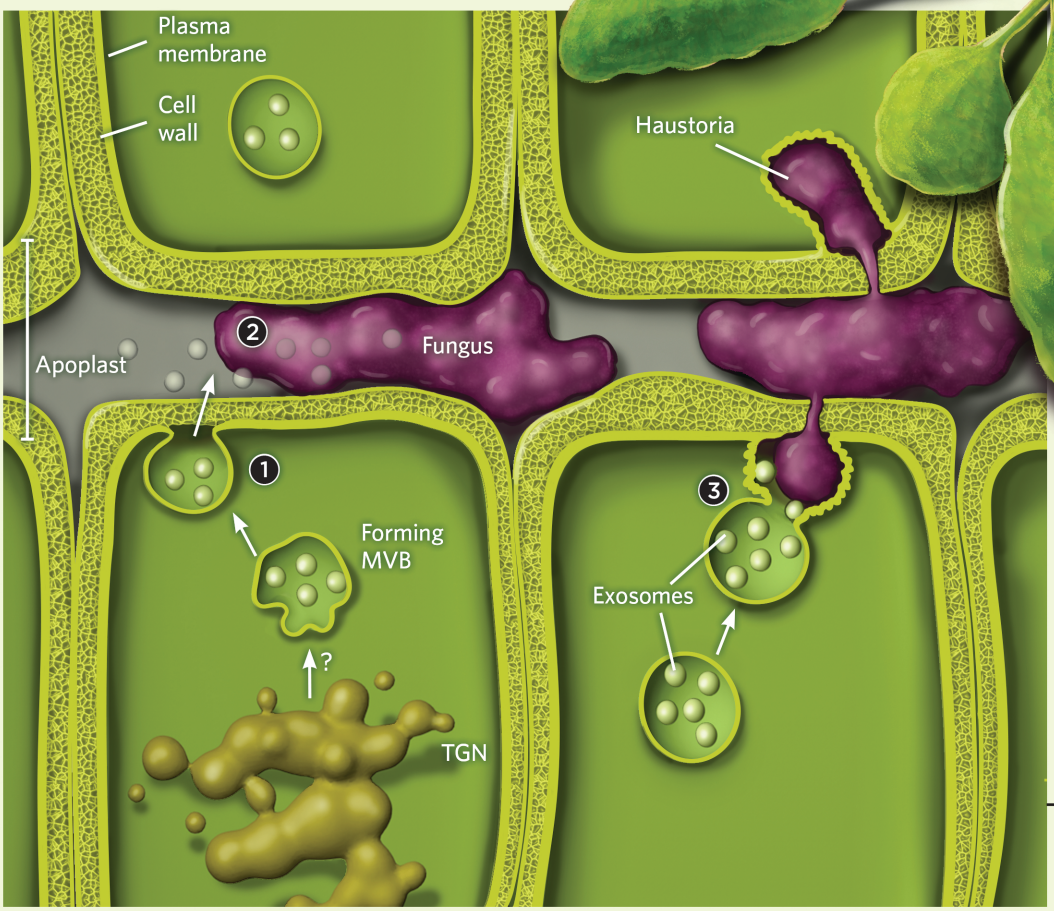
PLANTS DEPLOY EXOSOMES TO STOP ALIEN INVADERS

As fungal pathogens sink their feeding apparatuses into host cells, plants can fight back by shooting out vesicles packed with defensive molecules.



Exosomes start out as vesicles within multivesicular bodies (MVBs), whose source in plants is currently unknown, but may be the trans-golgi network (TGN), which sorts proteins for delivery to various cellular locations. MVBs fuse with the plant plasma membrane to release exosomes into the apoplast, which includes the cell wall and the space between cells ❶.

Mounting evidence suggests exosomes have several roles in plant defense. For example, when the haustoria, or feeding structures, of pathogenic fungi penetrate a plant's cell walls, exosomes may deliver molecules to reinforce the cell wall. Through an unknown mechanism, exosomes can also cross the cell wall and enter nearby fungal cells to deliver fungal defense proteins and short interfering RNAs that disrupt the translation of fungal proteins ❷.

Plant-derived exosomes also help establish a protective barrier around fungal haustoria that have established themselves within the cell wall by delivering antifungal molecules and materials such as complex polysaccharides ❸.