

## INTESTINAL MOLECULAR SIGNALING

Microbes, both good and bad, can exert direct effects on host cells and vice versa. For example, pathogenic bacteria such as some strains of *E. coli* and *Salmonella* reduce the overall number of normal gut commensal bacteria, promoting their own growth, whereas some commensals have been shown to prevent pathogens from producing deadly Shiga toxin **(A)**. Commensals also have essential chemical exchanges with the host. Gut bacteria are required for the normal development of the immune system, and the host actively dampens its normal immune response to allow commensals to grow **(B)**. Pathogenic bacteria also affect the host cells directly, releasing signals that compromise the host immunity; indeed, some host signals, such as stress hormones, can exacerbate disease by increasing bacterial virulence **(C)**. Because of their specific actions, these channels of chemical communication can be a valuable reservoir to tap for potential drugs. Like hormones, some these molecules could have downstream effects on distant organs like the pancreas, the lungs, or the brain. These channels of chemical communication can be a valuable reservoir to tap for potential drugs.

