



FIGURE 6.27. There are two major variants of quorum sensing. In many gram-negative species, the autoinducer is an acyl homoserine lactone (*pentagons*). In gram-positive species, it is often a peptide known as AIP (autoinducing peptide). A specific strain of bacteria produces its own form of autoinducer molecule, which then diffuses freely into the environment as well as into other cells. Each strain also has a receptor protein that recognizes its own autoinducer. When the autoinducer concentration crosses a particular threshold, the receptor becomes a transcription activator, leading to the induction of a suite of genes that have the activator-binding site as part of their promoter. An important aspect of the evolution of the autoinducer-based quorum sensing is that all known autoinducer-based processes are homologous and use members of one gene family (*LuxI*) to produce the autoinducer and members of another gene family (*LuxR*) to encode the receptor.

6.27, redrawn from Taga M.E. et al., *Proc. Natl. Acad. Sci.* **100**: 14549–14554, © 2003 National Academy of Sciences, U.S.A.