

Abstract

Second messengers are small molecules that belong to one of the fundamental types of cell signalling. Their function is to transmit signals from extracellular or intracellular receptors to specific effector proteins. This type of signal transduction is evolutionarily ancient and conserved, occurring in every cellular organism. However, individual taxa differ in the specific compounds they use in signal transduction. In bacteria, different nucleotide derivatives are mostly used. The most important examples are cAMP, (p)ppGpp, c-di-GMP and c-di-AMP. Bacterial second messengers are involved in the regulation of metabolism, biofilm formation, stringent response, osmoregulation, protection against viral infection and many other processes. In addition to describing these signalling pathways, this work also deals with enzymes for synthesis and degradation of these small signalling molecules.