



## Bacterial Quorum Sensing Mechanism and Anti-Biofilm Strategies

Gopika Goyal, Rishika Chaddha, Reema Gabrani \*

*Jaypee Institute of Information Technology, A-10, Sector 62, Noida, UP 201307, India*

Address for Correspondance: Reema Gabrani, [reema.gabrani@jiit.ac.in](mailto:reema.gabrani@jiit.ac.in) ; [goyalgopika@gmail.com](mailto:goyalgopika@gmail.com)

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**ABSTRACT:** To habituate in competitive environment, bacteria have adopted a cell to cell communication mechanism known as Quorum Sensing (QS). In bacteria, these communications involve triggering, releasing, sensing and responding to small hormone like molecules termed autoinducers. Gram positive and Gram negative bacteria embrace these QS circuits to regulate their cooperative and various physiological activities such as virulence, colonization, adaption, exopolysaccharide production, antibiotic resistance, motility and biofilm formation. Quorum sensing bacteria have certain receptors specific to these signaling molecules (autoinducers). When these inducers bind to receptors, the inducer receptor complex triggers the transcription of certain genes such as virulence genes, inducer synthesis genes and form a positive feedback loop. Bacteria communicate with each other and facilitate biofilm formation. In general, Gram negative bacteria use family of well organized auto inducers known as N-acylhomoserine lactones (AHLs) and Gram-positive bacteria use processed oligo-peptide as signaling molecules. Since quorum sensing is one of the major factor in biofilm development and antibiotic resistance, thus several approaches are being assessed to inhibit quorum sensing signals. Best quorum quenching strategy to inhibit quorum sensing signal is being explored by use of several enzymes. Two major classes of enzymes that degrade AHLs signal molecules are investigated which includes lactonases that hydrolyze the homoserine (HSL) ring and acylases that cleave the acyl side chain from the HSL ring. So, use of enzymes opens up new perspectives for the development of innovative novel antibacterial strategies. © 2016 iGlobal Research and Publishing Foundation. All rights reserved.

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