



Understanding the Connect of Quorum Sensing and CRISPR-Cas System: Potential Role in Biotechnological Applications

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Anoop Singh, Mohita Gaur, and Richa Misra

Abstract

Quorum sensing is employed by bacteria to control gene expression, by communicating through signals, necessary to confer advantageous traits in a community. We now understand that to counter susceptibility to phages in communities, bacteria evolved specialized adaptive immune system called CRISPR-Cas (clustered regularly interspaced short palindromic repeats and CRISPR-associated proteins) system that may use quorum sensing for its regulation. As a countermeasure, phages have also evolved diverse mechanisms to evade the defense strategies. The chapter discusses the dynamics of this co-evolutionary war, understanding of which will help pave way for many biotechnological applications. An important aspect includes refining tools such as quorum-sensing inhibition and phage therapy that are utilized to control many biofilm-forming bacterial infections.

Keywords

Quorum sensing · CRISPR-CAS system · Biotechnology

15.1 Introduction

Although bacteria are unicellular organisms, they are capable of organizing themselves in a community for mutual benefit, for which they need to work in a coordinated manner. They live in diverse niches, from sporadic population to dense

A. Singh · M. Gaur

Department of Zoology, University of Delhi, Delhi, India

R. Misra (✉)

Department of Zoology, University of Delhi, Delhi, India

Department of Zoology, Sri Venkateswara College, University of Delhi, Delhi, India

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V. C. Kalia (ed.), *Quorum Sensing and its Biotechnological Applications*,
https://doi.org/10.1007/978-981-13-0848-2_15

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Richa Misra