

Abstract Submitted
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Computational modeling of the quorum-sensing network in bacteria ANDREW FENLEY, SUMAN BANIK, RAHUL KULKARNI, Virginia Tech — Certain species of bacteria are able produce and sense the concentration of small molecules called autoinducers in order to coordinate gene regulation in response to population density, a process known as “quorum-sensing”. The resulting regulation of gene expression involves both transcriptional and post-transcriptional regulators. In particular, the species of bacteria in the *Vibrio* genus use small RNAs to regulate the master protein controlling the quorum-sensing response (luminescence, biofilm formation, virulence...). We model the network of interactions using a modular approach which provides a quantitative understanding of how signal transduction occurs. The parameters of the input-module are fit to current experimental results allowing for testable predictions to be made for future experiments. The results of our analysis offer a revised perspective on quorum-sensing based regulation.

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