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Modeling of signal transduction in bacterial quorum-sensing ANDREW FENLEY, Virginia Tech, SUMAN BANIK, Virginia Tech, RAHUL KULKARNI, Virginia Tech — Several species of bacteria are able to coordinate gene regulation in response to population density, a process known as “quorum-sensing”. Quorum-sensing bacteria produce, secrete, and detect signal molecules called autoinducers. For several species of bacteria in the *Vibrio* genus, recent results have shown that the external autoinducer concentrations control the expression of regulatory small RNA(s) which are critical to the process of quorum-sensing. We present a theoretical analysis of the network which relates the rate of small RNA expression to the external autoinducer concentrations. We relate the results from our modeling to previous experimental observations and suggest new experiments based on testable predictions of the model.

Andrew Fenley
Virginia Tech

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