Abstract Submitted
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Studying bacterial quorum-sensing at the single cell level[1] PABLO DELFINO PEREZ, LESLIE PELAKH, JONATHAN YOUNG, ELAINE JOHNSON, STEPHEN HAGEN, University of Florida, Department of Physics, Gainesville FL 32611-8440 USA — Like many bacterial species, *Vibrio fischeri* can detect its own population density through a quorum sensing (QS) mechanism. The bacterium releases a signal molecule (AI, autoinducer), which accumulates at high population density and triggers a genetic switch. In *V.fischeri* this leads to bioluminescence. Little is known about how stochastic gene expression affects QS at the level of single cells. We are imaging the luminescence of individual *V.fischeri* cells in a flow chamber and directly measuring the intercell variability in AI activation of the QS circuit. Our single-cell luminescence experiments allow us to track cells over time and characterize variations in their response to AI levels. We find heterogeneous response to the external signal: at a given AI concentration some cells may be strongly luminescent while others are virtually dark. The analysis of noise in the individual cell response can eventually lead to a better understanding of how cells use QS to gather information about their environment.

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