Must Read

F1000 Factor **6.0**

EndNote

Download citation

Send page by email

Cooperation and conflict in quorum-sensing bacterial populations.

Diggle SP, Griffin AS, Campbell GS, West SA

Nature 2007 Nov 15 **450**(7168):411-414 [abstract on PubMed]
[citations on Google Scholar] [related articles] [full text] [order article]

Selected by | Gerald Pier NEW
Evaluated 20 Nov 2007
Relevant Sections

Faculty Comments

Faculty Member	Comments

Gerald Pier
Harvard Medical School, United States of America
MICROBIOLOGY

Hypothesis
New Finding

This is an exceedingly interesting article of importance to the study of quorum sensing (QS) in bacterial populations, particularly those involved in "biofilm-based" infections, as it evaluates how Pseudomonas aeruginosa cells involved in QS-mediated activities respond to predictions from evolutionary theory related to how individual cells that can communicate and cooperate in QS-based behaviors might be exploited by mutants that can avoid the cost of cooperation. In this study, they showed that QS-mutant cells that either did not produce QS molecules but could respond to them (signal-negative mutants) and those that could produce the signal but did not respond to QS molecules (signal-blind mutants) responded to different growth conditions that could evaluate the fitness of these different mutants when grown as individual or mixed cultures. They found that bacterial QS-directed behaviors were social traits, similar to those found in more complex organisms, and that this behavior could be exploited by signal-blind mutants when growing in the presence of cooperative, QS-producing cells. By not expending the energy, and therefore incurring the cost, of having to produce the factors controlled by QS signals, the signal-blind mutants could become prevalent in the population of cells. As it is now clear, within the lung of chronically infected cystic fibrosis patients many QS mutants of P. aeruginosa are isolated; it appears this likely results from the competitive pressures within this environment favoring survival and spread of QS mutants. These findings should profoundly affect the thinking about the advisability of controlling P. aeruginosa, and likely other QS-dependent bacterial populations, with anti-QS strategies.

Competing interests: None declared
Evaluated 20 Nov 2007 NEW

How to cite this evaluation

Faculty Comments

How to cite the Faculty of 1000 Biology evaluation(s) for this paper

1) To cite all the evaluations for this article:

Faculty of 1000 Biology: evaluations for Diggle SP et al *Nature* 2007 Nov 15 450 (7168) :411-414 http://www.f1000biology.com/article/id/1095043/evaluation

2) To cite an evaluation by a specific Faculty member:

Gerald Pier: Faculty of 1000 Biology, 20 Nov 2007 http://www.f1000biology.com/article/id/1095043/evaluation