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Deadly competition between sibling bacterial colonies.

Be'er A, Zhang HP, Florin EL, Payne SM, Ben-Jacob E, Swinney HL
Proc Natl Acad Sci U S A 2009 Jan 13 **106**(2):428-33 [[abstract on PubMed](#)]
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Selected by | Simon Andrews / Des Field and Paul Cotter

First evaluation 20 Jan 2009 | Latest evaluation 13 Feb 2009

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Comments

Simon Andrews

University of Reading,
 United Kingdom
 Microbiology

 New Finding

This paper shows that apparently identical neighbouring colonies derived from sibling bacteria display mutual inter-colony growth inhibition but do not display intra-colony growth inhibition (no growth inhibition within a single colony).

Secretions from the agar between neighbouring colonies were found to cause growth inhibition and cell death, whereas those from single colonies did not. The mechanism involved is unclear, as is the evolutionary advantage imparted by the observed inter-colony inhibition. However, the observation is fascinating and I look forward to hearing more about how common this effect is amongst micro-organisms and how it is achieved.

Competing interests: None declared

Evaluated 20 Jan 2009

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Des Field and

Paul Cotter

Teagasc, Ireland
 Microbiology

 New Finding

While it is common knowledge that bacteria produce an array of antimicrobial compounds that are directed against other competing bacteria, this study demonstrates that genetically identical sister cells can commit soricide but only after a period of separation from one another.

The production of an antimicrobial compound by a bacterium can provide it with an advantage over neighbouring bacteria when competing for limited resources. While many of these substances have a broad spectrum of activity, others specifically attack closely related bacteria. It is now apparent that competition is even more cut-throat than previously anticipated and can occur between siblings. Here, it has been established that *Bacillus subtilis* and *Streptococcus pneumoniae* are not unique in this regard (for a review see {1}), i.e. this phenomenon is also evident among *Paenibacillus dendritiformis* cells. Be'er and colleagues investigate this interplay in greater depth than heretofore and reveal that, when sister cells are present

within different colonies, both colonies secrete an inhibitor that is lethal, when over a threshold level, to bacteria in the adjacent colony. In contrast, secretions from a single colony had no inhibitory effect. While this inhibitor remains to be identified, it serves to highlight the deadly arms race developing in nature not only between unrelated bacteria but also between sister cells.

References: { 1 } Claverys and Havarstein, Nat Rev Microbiol 2007, 5:219-29 [PMID:17277796].

Competing interests: None declared
Evaluated 13 Feb 2009

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1) To cite all the evaluations for this article:

Faculty of 1000 Biology: evaluations for Be'er A et al *Proc Natl Acad Sci U S A* 2009 Jan 13 106 (2) : 428-33
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Simon Andrews: Faculty of 1000 Biology, 20 Jan 2009 <http://www.f1000biology.com/article/id/1144972/evaluation>

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