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Monday August 27, 2007

# Cheating Bacteria Cause Their Own Downfall

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Cooperation is widespread in the natural world, but so too are cheats. These "mutants" don't contribute to the collective good but simply reap the benefits of others' cooperative efforts.

In a recent study, reported in the September issue of the *American Naturalist*, biologists found cheating bacteria orchestrate their own downfall. They studied populations of the notorious pathogen, *Pseudomonas aeruginosa*, which cooperate to scavenge iron from their environment. The cheaters don't help much with the scavenging and instead simply steal the iron stores from others.

There's a snag, however, in that too many cheats can make for sparse supplies.

"Cheats are kept in check by simple frequency dependence," said lead study author Adin Ross-Gillespie of the University of Edinburgh. "When rare, cheats prosper at the expense of cooperators, but as they become more common, the profitability of their strategy declines."

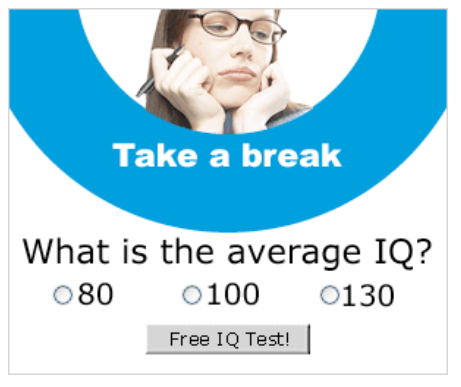
In the study, they found that populations with few cheats grew rapidly and achieved larger absolute sizes in the time available, providing greater opportunity for cheats to exploit the situation. Communities with high proportions of cheats grew poorly. "Too many cheats spoil the broth," Ross-Gillespie said.

—LiveScience Staff

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Credit: Adin Ross-Gillespie

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