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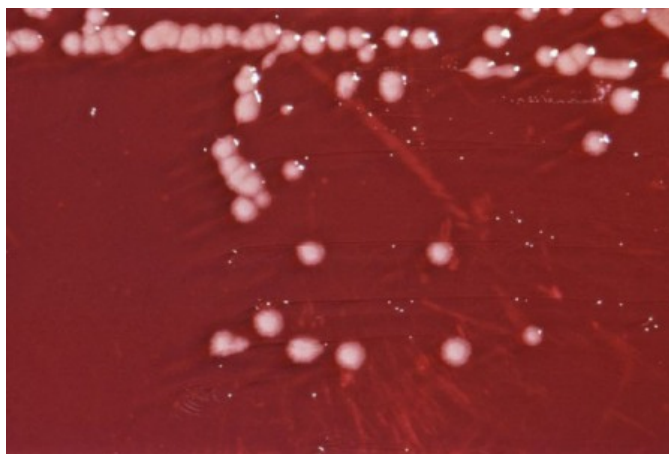
Exploding Bacteria, Self-Fertilizing Bugs and Other Cool Critters

Posted by **TARA THEAN** Friday, July 29, 2011 at 1:39 pm

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Pseudomonas aeruginosa bacteria on an agar plate. (Photo: Center for Disease Control)

No matter how jaded you become, there is always room to be awed by the little shimmers of magic nature deals us on a regular basis. There's something just plain cool about a world that offers up [coral shaped like organ pipes](#), [peppermint shrimp](#), and [monkeys feasting on fermented leaves](#). A handful of unrelated studies this week added a few more life forms to Earth's roster of biological weirdness.

The smallest — but easily the most dramatic — of the new critters are the suicide-bomber bacteria discovered by researchers at the University of Oxford and ETH Zürich (think Switzerland's MIT) and reported in a paper in *The American Naturalist*. Known by the misleadingly unremarkable name *Pseudomonas aeruginosa*, the little bugs have a nasty habit of blowing themselves up and releasing a spray of toxins when too many of their fellow *Pseudomonas aeruginosa* are in the vicinity. The detonation kills some of the bystanders and reduces competition for food among the survivors.

This seems like an awfully egalitarian act, especially for a bacterium, but the paradoxical reason behind the suicide is to increase the deceased's chances of leaving descendants. That ought to be pretty hard when you've just blasted yourself to bits, but according to ETH team-leader [Fredrik Inglis](#), the behavior is likeliest to occur in “clonal” bacterial communities, in which all individuals share the same genes. In this situation, it doesn't much matter who survives to divide and who doesn't, since the whole reason all creatures — ourselves included — are impelled to reproduce in the first place is to pass on their genes. If everyone's got the same DNA blueprint, the next guy's descendants are as good as your own. The Inglis team admits that they can't say what causes any single bacterium to be the one that takes a bullet for the team, but the research is already pointing in other, more practical directions. Studying how bacterial toxins work and interact could help

explain how bacteria themselves cause disease.

Photos from TIME: [The Otherworldly Flora and Fauna of the Coral Triangle](#)

A better — and decidedly less messy — way to ensure that you pass on your genes has been perfected by the self-fertilizing female scale insects, as reported in a study in *The American Naturalist*, also by researchers at Oxford. Hermaphroditism — in which the same individual produces both male and female gametes — is hardly unknown, but it is rare, occurring in less than 6% of all animal species. The scale insects, take it to a new, and arguably ickier, level. Instead of producing two kinds of gametes and simply allowing the male variety to fertilize the female variety within the body, these bugs produce eggs that are fertilized by a parasitic tissue derived from leftover sperm from the female's father. That's an odd family arrangement that could get a lot odder before too long: According to a mathematical model developed by study author Laura Ross and her team, once the parasitic “fathers” become widespread within a population, the need for males in that population may be eliminated entirely.

Prolific reproduction can mean high-speed evolution, with every generation offering a chance to introduce upgrades to the product line, and no one's doing that better than the rapidly evolving fanged frog known as *Limnonectes*, which, according to a study by evolutionary geneticist [Ben Evans](#) of McMaster University, is flourishing in nine different varieties on the Philippines island of Sulawesi — each variety different enough to qualify as a separate species. All of the species have their own unique body size, amount of foot-webbing, and method of raising their young. The reason for this explosion of species is that the island is relatively free of frog competition — unlike the Philippine archipelago at large, in which the *Limnonectes* must fight for resources alongside the *Platymantis* species. Sulawesi *Limnonectes* are thus free to experiment with all kinds of adaptive innovations, as opposed to coming up with just one sturdy model that can go toe to toe with the competition.

All this clever R&D is an enduring feature of evolutionary biology, which is good for the planet, good for biodiversity — and really good for the scientists who go hunting for new critters. Nature is one manufacturer, after all, that never runs out of ideas.

Tara Thean is a TIME contributor. Find her on Twitter at [@TaraThean](#). You can also continue the discussion on TIME's [Facebook page](#) and on Twitter at [@TIME](#).

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