

MICROBIOLOGY

Russian doll-style symbiosis

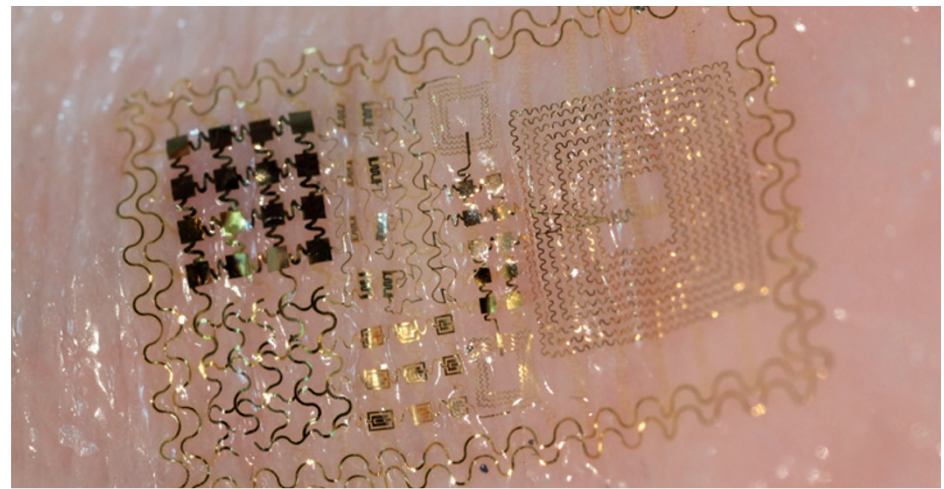
Two bacteria that generate amino acids for their insect host, the mealybug, live one inside the other in an unprecedented nested arrangement.

John McCutcheon at the University of Montana in Missoula and Carol von Dohlen at Utah State University in Logan sequenced and analysed the genomes of the two bacterial species. One is *Candidatus 'Tremblaya princeps'*; the other is an unnamed species that lives in *Tremblaya's* cytoplasm, which the authors propose to name *Candidatus 'Moranella endobia'*.

The duo found that *Tremblaya* has the smallest reported bacterial genome, with just 121 protein-coding genes. Although *Tremblaya* has retained several genes involved in the biosynthesis of essential amino acids, it lacks any complete pathways. *Moranella* complements several missing genes, patching holes in the pathways and enabling the production of essential amino acids for the mealybug (*Planococcus citri*; pictured). *Curr. Biol.* <http://dx.doi.org/10.1016/j.cub.2011.06.051> (2011)



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MATERIALS

Skin-deep electronics

A thin, stretchy patch of plastic carrying electronic circuitry can stick to skin like a temporary tattoo and be used to record heart rate, brain activity and muscle contractions.

This 'electronic skin', developed by John Rogers at the University of Illinois at Urbana-Champaign and his team, consists of components including sensors and antennae, sandwiched between two protective layers. It is powered by embedded solar cells or inductive coils that can

generate current wirelessly. The sandwich sits on a flexible sheet of modified silicone designed to match the physical properties of skin.

The authors hope that the device, which is less than 40 micrometres thick, will one day replace wires and large equipment for health monitoring.

Science 333, 838–843 (2011)

For a longer story on this research, see go.nature.com/gftxum

GEOLOGY

The north-south connection

A billion or so years ago, Antarctica and North America were connected in the supercontinent Rodinia, according to an analysis of ancient rocks from East Antarctica, northern Michigan and Texas.

Staci Loewy at California State University in Bakersfield and her colleagues studied rocks from the Coats Land block of East Antarctica and compared the results with data on rocks from the North American midcontinent rift system. These are roughly

1.1 billion years old and have similar geological properties. The team found that the rocks have the same composition of lead isotopes. The results suggest that the Coats Land block was connected to ancient North America west of present-day Texas.

Geology 39, 859–862 (2011)

EVOLUTIONARY BIOLOGY

Sugar sweetens cell cooperation

Yeast cells that clump together are better able to grow than lone cells when resources are scarce. The finding suggests a possible stimulus for the evolution of multicellular

organisms, say John Koschwanez and his colleagues at Harvard University in Cambridge, Massachusetts.

Some cells of the yeast *Saccharomyces cerevisiae* do not separate completely after dividing and instead form multicellular aggregates. The team manipulated this aggregation and the secretion of a yeast enzyme, invertase, that breaks down sucrose, and tracked the cells' growth. Clumps of yeast cells survived when sucrose levels were too low to support individual cells; aggregated cells benefited from sugars that were produced but not consumed by their neighbours.

PLoS Biol. 9, e1001122 (2011)