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Bacteria can help convert waste to power

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WASHINGTON: Bacteria that generate power could be used in microbial fuel cells to convert waste into electricity, according to the latest research.

University of Massachusetts researchers isolated bacteria with large numbers of tiny projections called pili which transfer electrons to generate power in fuel cells, more efficiently than counterparts with a smooth surface.

The researchers isolated a strain of *Geobacter sulfurreducens* which they called KN400 that grew prolifically on the graphite anodes of fuel cells.

The bacteria formed a thick bio-film on the anode surface, which conducted electricity. The researchers found large quantities of pilin, a protein that makes the tiny fibres that conduct electricity through the sticky bio-film.

"The filaments form microscopic projections called pili that act as microbial nanowires," said Derek Lovley, U-M professor. "Using this bacterial strain in a fuel cell to generate electricity would greatly increase the cell's power output."

Microbial fuel cells can be used in monitoring devices in environments where it is difficult to replace batteries if they fail but to be successful they need to have an efficient and long lasting source of power.

Lovley described how KN400 might be used in sensors placed on the ocean floor to monitor migration of turtles.

These findings were reported at the Society for General Microbiology's meeting at Heriot-Watt University, Edinburgh, on Monday.

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