A bacterium that degrades and assimilates poly (ethylene terephthalate) and its enzymes involved in the degradation

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Poly (ethylene terephthalate) (PET) is used extensively worldwide in plastic products, and its accumulation in the environment has become a global concern because the ability to enzymatically degrade PET for microbial growth has been limited to a few fungal species, biodegradation is not yet a viable remediation or recycling strategy. By screening natural microbial communities exposed to PET in the environment, we isolated a novel bacterium, Ideonella sakaiensis 201-F6 that is able to use PET as its major energy and carbon source. When grown on PET, this strain produces two enzymes capable of hydrolyzing PET and the reaction intermediate, mono(2-hydroxyethyl) terephthalic acid (MHET). Both enzymes are required to enzymatically convert PET efficiently into its two environmentally benign monomers, terephthalic acid and ethylene glycol.

Biography
Kohei Oda has obtained his MS degree at the University of Osaka Prefecture (UOP) in 1969, and PhD in 1975. He worked at UOP as an Assistant, and as an Associate Professor. He moved to the Kyoto Institute of Technology (KIT) as a Professor in 1992. His scientific fields of interest are Applied Microbiology and Applied Biochemistry. In 2007, KIT awarded him the status of Professor Emeritus. He worked as a Visiting Professor at the Universidad Federal de Sao Paulo, Brazil in 2007, and at Khon Kaen University, Thailand in 2009. He received an Award from Nikkei Business Publications, Inc in 1997. Since 2016, he has become a Fellow of the Japan Society for Bioscience, Biotechnology, and Agrochemistry. His main contributions are discoveries of novel families of peptidases, sedolisins and eqolisins. His ongoing interests are not only sedolisins and eqolisins, but also microbial hydrolytic enzymes involved in degradation of poly (ethylene terephthalate) (PET).

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