Supplementary Materials for

Biodegradation of Poly (Ethylene Terephthalate) by *Bacillus safensis* YX8

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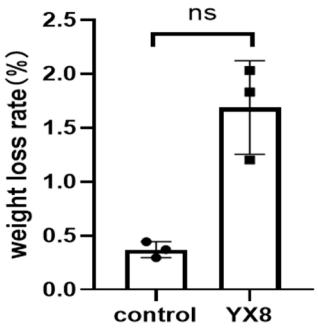

Figure S1. The weight loss rate of PET film after incubated with or without strain YX8. One (2 cm×2 cm) PET film was incubated in 50mL LB broth with or without strain YX8 at 45℃ and 200 rpm for 2 months.

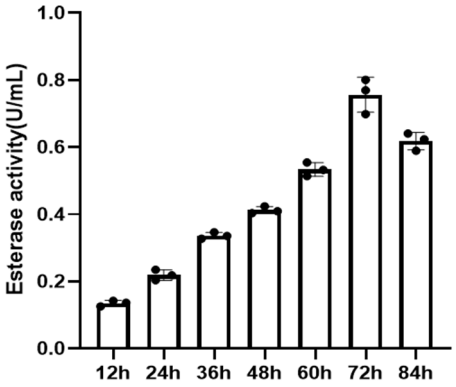

Figure S2. The extracellular esterase activity of strain YX8 grown in LB broth. The esterase assay system included 10 μL of 10 mM *p*-nitrophenol acetate, 10 μL of crude enzyme, 980 μL of 50 mM Tris-HCl (pH 8.0 and 300 mM NaCl). The reaction was carried out at 25℃ for 3 min, and then OD_{405} was detected by spectrophotometer.

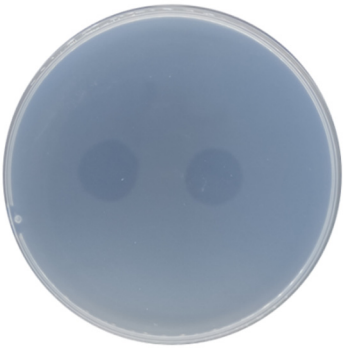

Figure S3. Detection the PCL-hydrolyzing activity of concentrated crude enzymes. Strain YX8 was grown in LB broth for 72 h. The extracellular enzymes were concentrated and dropped on LB plate containing 0.44% PCL.

Table S1. Reported PET-degrading strains and enzymes.

Enzyme	Source	Substrate	PET degradation ability and temperature	Reference
PET2	Uncultured bacterium (marine metagenome)	nanoparticle ager	Zone of clearance, 50℃	[1]
PET5	*Oleispira antarctica* RB-8	nanoparticle ager	Zone of clearance , 50℃	[1]
PET12	*Polyangium brachysporum*	nanoparticle ager	Zone of clearance , 50℃	[1]
PET6	*Vibrio gazogenes*	nanoparticle ager	Zone of clearance , 50℃	[1]
PE-H	*Pseudomonas aestusnigri* VGXO14^{T}	amorphous PET film	MHET released in 48 h, 30℃	[2]
CALB	*Candida antarctica*	Low-crystallinity and biaxially oriented PET films	TPA, BHET, MHET were released	[3]
LCC	Metagenome from leaf branch compost	amorphous PET film	50% weight loss, 50-70℃	[4]
LCC^{ICCG}	Engineered LCC	amorphous PET film	90% weight loss in 9.3 h, 72℃	[5]
Hic	*Humicola insolens*	lcPET (crystallinity 7%)	97 ± 3% weight loss in 6 day, 70℃	[6]
FsC	*Fusarium solani pisi*	lcPET (crystallinity 7%)	5% weight loss in 4 days, 30-60℃	[6]
Cut190	*Saccharomonospora viridis*AHK190	Amorphous PET film and package-grade PET	TPA and MHET released in 3 days,60-65℃	[7]
TfH	*Thermobififida fusca* DSM43793	bottle-grade PET (crystallinity 10 %)	50% weight loss, 55℃	[8]
Thc_Cut1	*Thermobifida cellulosilytica* DSM44535	PET film (crystallinity 37%)	MHET, TPA, and HEB released in 5 days, 50℃	[9]
Thc_Cut2	*Thermobifida cellulosilytica* DSM44535	PET film (crystallinity 37%)	MHET, TPA, and HEB released in 5 days, 50℃	[9]
Thf42_Cut1	*Thermobifida fusca* DSM44342	PET film (crystallinity 37%)	MHET, TPA, and HEB released in 5 days, 50℃	[9]
TfCut2	*Thermobifida fusca* KW3	PET film	12.6% weight loss in 48 h, 55-65℃	[10]
Tcur0390	*Thermomonospora curvata* DSM43183	PET nanoparticle	20 μg/mL substrate degrade rate 5.9×10^{-3} min^{-1},50℃	[11]
TfCa	*Thermobifida fusc* KW3	cyclic PET trimers	EMT, MHET, and BHET were released, 50-60℃	[12]
BsEstB	*Bacillus subtilis*	3PET	TPA, MHET and BA were released, 40-45℃	[13]
Thh_Est	*Thermobifida halotolerans* DSM44931	3PET	TPA, BA HEB, and MHET were released, 50℃	[14]

IsPETase	*Ideonella sakaiensis* 201-F6	PET film (crystallinity 1.9%)	TPA, MHET, and EG released in 1 day, 20-45℃	[15]
Unknown	*Bacillus safensis* YX8	PET nanoparticles	TPA, MHET, and BHET released in 48h, 45℃	This study

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16s rRNA gene sequence

GGCGGCGTGCCTAATACATGCAAGTCGAGCGGACAGAAGGGAGCTTGCTCCCGGATGTTAGCGGCGGACGG
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gyrA gene sequence

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