1. **Please translate the following paragraph into Chinese (英翻中)(25%)**
Organic farming is supposed to be environmentally friendly due to abandonment of external inputs such as mineral fertilizers or pesticides. Albeit conversion to organic farming frequently comes along with a decline in crop yields, proponents of organic farming emphasize the sustainability of that system particularly because of improving organic matter-related soil quality. Based on recent research on mechanisms driving soil organic matter turnover, however, it rather appears that low-input agro-ecosystems may convert to smaller efficiency in terms of substrate use by heterotrophs which may affect soil organic matter storage in the long run. A compilation of field data confirms an inferior use efficiency in some organic soils and thus questions the claim of an overall sustainable use of the soil resource in organic farming systems. (From J. Leifeld (2012) *Agriculture, Ecosystems & Environment* 150:121-122).

2. **Please translate the following paragraph into Chinese (英翻中)(25%)**
Agricultural chemistry is most often linked to food and fiber production, specifically for human consumption. Jared Diamond in *Guns, Germs, and Steel* argues quite convincingly that it was our ability to domesticate crops and eliminate the need for hunting and gathering that allowed for the establishment of permanent settlements and the development of technologically advanced societies. The ensuing increase in human population has led to tremendous pressure to produce additional food from finite resources. Increased agricultural production, in combination with additional resource consumption and waste generation, has caused environmental degradation. By understanding key concepts in agricultural chemistry, we can utilize the soil resource to produce an adequate food supply and protect the environment. (From M. J. Morra, *Chemistry Encyclopedia*)

3. **Please translate the following paragraph into Chinese (英翻中)(25%)**
Biofilms are a major form of microbial life in which bacteria form dense surface-associated communities, typically enclosed in a matrix of self-produced exopolymeric substances (EPS). Bacteria within biofilms are up to 1,000 times more tolerant to antibiotics, disinfectants, mechanical removal, and other stresses, and this tolerance heavily impedes antimicrobial treatment. Hence, persistent biofilm infections and contaminations widely occur and cause a tremendous amount of problems in various sectors, including medicine, food industry and agriculture. This urges the need for strategies that inhibit biofilm formation and render microbes susceptible to treatment. Several approaches have been proposed ranging from blocking bacterial attachment, to inhibiting or destabilizing EPS, and interfering with quorum sensing. Given the limited permeability of established biofilms, particular promise comes from strategies that continually treat surfaces to prevent the formation of biofilms. (From Dieltjens L. et. al., (2020) *Nature Communications* 11:107).

4. **Please translate the following paragraph into Chinese (英翻中)(25%)**
Polyethylene terephthalate (PET) is one of the most widely used plastics in the world. Accumulation of the discarded PET in the environment is creating a global environmental problem. Recently, a bacterial enzyme named PETase was found to have the novel ability to degrade the highly crystallized PET. However, the enzymatic activity of native PETase is still low limiting its possible use in recycling of PET. In this study, we developed a whole-cell biocatalyst by displaying PETase on the surface of yeast (*Pichia pastoris*) cell to improve its degradation efficiency. Our data shows that PETase could be functionally displayed on the yeast cell with enhanced pH and thermal stability. The turnover rate of the PETase-displaying yeast whole-cell biocatalyst towards highly crystallized PET dramatically increased about 36-fold compared with that of purified PETase. Furthermore, the whole-cell biocatalyst showed stable turnover rate after seven repeated use and under some chemical/solvent conditions, and its ability to degrade different commercial highly crystallized PET bottles. Our results reveal that PETase-displaying whole-cell biocatalyst affords a promising route for efficient biological recycling of PET. (From Chen Z. et. al., (2019) *Science of the Total Environment* 709:136138).

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