

## **New bio-engineered fungus**

In the United States, researchers at the Agricultural Research Service (ARS) have bio-engineered a new strain of *Rhizopus oryzae*. The new micro-organism could become a workhorse for converting grain, corn starch and other agricultural wastes into lactic acid (LA), a building block for polylactic acid (PLA) plastic. PLA is a biodegradable analogue of polyethylene terephthalate (PET). As a product of fermentation, *R. oryzae* produces LA that is more uniform in quality and purity than that harvested from bacterial fermentations using *Lactobacillus*, report microbiologists at ARS.

Researchers isolated the enzyme lactate dehydrogenase (Ldh), which catalyses a rate limiting step for the metabolism of glucose to LA, then cloned the gene responsible for the enzyme's synthesis and engineered the fungus to have multiple copies of the gene. The new recombinant strains produce nearly 30 per cent more lactic acid than the original parent strain, and in less time. The final fermentation product has minimal by-products and is heat stable. Furthermore, the resulting LA is in the stereo chemical form that is more desirable for making PLA. (Chemical Weekly, 26 December 2000)