NEW YEAST STRAINS

Use	Yeast	Reference	ATCC® No.
Lethal disruption of actin gene	*Saccharomyces cerevisiae*	Science **217:** 371–373, 1982	52278
Produces ethanol from D-Xylose	*Candida sp.*	U.S. Pat. 4,368,268	20615
Regulation of HIS4 gene	*Saccharomyces cerevisiae* (various genotypes)	Mol. Cell. Biol. **2:** 1212–1219, 1982	52284–52292
Cloning of SUF2 frameshift suppressor gene	*Saccharomyces cerevisiae* (various genotypes)	Gene **14:** 263–278, 1981	52051–52054, 52068

NEW BACTERIAL STRAINS

Use	Bacterium	Reference	ATCC® No.
p-fluorophenylalanine-resistant host for plasmid pHE3	*Escherichia coli*	Gene **19:** 231–234, 1982	35111
Plasmid host	*Escherichia coli*	Nucleic Acids Res. **10:** 5765–5772, 1982	35102
Host for ssDNA phage	*Escherichia coli*	Virology **49:** 45–60, 1972 J. Mol. Biol. **14:** 167–178, 1965	35049
Produces bacteriorhodopsin and a thermophilic extracellular amyloglucosidase	*Halobacterium sodomense*	Arch. Microbiol. **130:** 185–187, 1981 Int. J. Syst. Bact. **33:** 385, 1983 Curr. Microbiol. **8:** 225–230, 1983	33755
Plasmid host	*Streptococcus sangius*	Gene **19:** 345–353, 1982	35105
Produces neoviridogriseins I, II, III	*Streptomyces sp.*	U.S. Pat. 4,355,112	31289
Produces enteric colibacillosis vaccine	*Escherichia coli* (various serotypes)	U.S. Pat. 4,338,298	31616–31619
Produces L-glutamic acid and L-lysine	*Cellulomonas sp.* (various mutants)	U.S. Pat. 4,278,766	31230-31232

GRANTS

TITLE: Genetic and Physical Studies of Translocatable Genetic Elements in Bacteria
INVESTIGATOR: Nancy E. Kleckner
INSTITUTION: Harvard University
SOURCE: NSF

. . . . My laboratory wishes to understand at the molecular level the mechanism(s) by which DNA rearrangements occur and by which occurrence of these rearrangements is regulated, and to understand in detail the evolutionary role of such elements in bacteria. We work primarily with transposon Tn10.

We propose genetic experiments to analyze Tn10 self-regulation, to identify and further dissect Tn10-encoded sites and Tn10- and host-encoded functions involved in transposition, and to examine particular sequences and general factors that influence Tn10 insertion specificity.

TITLE: Improvement of Industrial Processes for Yeast Xylose Fermentation by Genetic Engineering Technology
INVESTIGATOR: Nancy W. Y. Ho
INSTITUTION: Purdue University
SOURCE: NSF

This proposal seeks to solve the problem of the fermentation of xylose to ethanol by yeasts in two ways. The first is to construct a plasmid for gene cloning in *Candida* yeast, and to use this vehicle to introduce the xylose isomerase gene from *E. coli,* which has already been isolated and purified, into *Candida tropicalis.* The transformed yeast is expected to have the ability of directly fermenting xylose to ethanol. The second approach is to apply recombinant DNA techniques to achieve over-production of xylose isomerase in *E. coli* or *B. subtilis.* The enzyme can then be added to a yeast culture to convert xylose to xylulose *in situ* to be fermented into ethanol. Since the isomerase is used to convert glucose to fructose on an industrial scale, its over-production will also have a favorable impact on the production of high fructose syrups.

TITLE: An Engineering Study of Conflicting Microbial Growth Strategies Using a Computer-Coupled Fermentor
INVESTIGATOR: P. S. Dhurjati
INSTITUTION: University of Delaware
SOURCE: NSF

. . . The objective of this research is the elucidation of fundamental mechanisms such as repression, induction, and inhibition in microorganisms as manifested in their preferential utilization of substrates. . . . Both batch and chemostat experiments will be performed with pure cultures of *Escherichia coli* and *Pseudomonas aeruginosa* grown on single as well as mixed substrates. The growth kinetics and the enzymatic regulatory mechanisms will be completely characterized for each microorganism using a computer-coupled fermentor fully equipped for control of agitation, temperature, and pH. . . . Engineering models incorporating fundamental enzymatic control information will be constructed for the various situations. . . .

TITLE: Fluidized-Bed Fermentor with Immobilized Living Cells
INVESTIGATOR: A. Constantinides and W. R. Vieth
INSTITUTION: Rutgers University
SOURCE: NSF

This research is a basic engineering study of an immobilized cell fluidized-bed fermentor. The model system for this study is ethanol production by immobilized *Saccharomyces cerevisiae* cells. The research will be carried out with three specific objectives: (a) to verify experimentally our biocatalyst inactivation process model for alcohol fermentation; (b) to immobilize and use yeast cells in their active state effectively for ethanol production; and (c) to develop a dual-column fluidized bed fermentor incorporating maximum utilization and regeneration of yeast cells at optimum operating conditions. . . . A scale-up study for energy requirements will be carried out and the process so developed will be compared economically with other alternative processes.