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(54) **NUCLEIC ACIDS OF *PICHTIA PASTORIS* AND USE THEREOF FOR RECOMBINANT PRODUCTION OF PROTEINS**

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(52) **U.S. Cl.**  
USPC ..... **435/320.1**; 435/254.23

(58) **Field of Classification Search** ..... None  
See application file for complete search history.

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(57) **ABSTRACT**

The present invention provides the genome sequence of *Pichia pastoris* and manually curated annotation of protein-coding genes. The invention provides novel nucleic acids, proteins, and related expression vectors useful for genetic engineering of methylotrophic yeast strains, as well as engineered methylotrophic yeast strains particularly *Pichia pastoris*, and use thereof for recombinant production of heterologous proteins including glycoproteins suitable for use in mammals including humans.

**4 Claims, 11 Drawing Sheets**  
**(7 of 11 Drawing Sheet(s) Filed in Color)**