The S. cerevisiae genome contains seven unlinked loci that encode invertase: SUC1, SUC2, SUC3, SUC4, SUC5, SUC7, and SUC8. This enzyme, also known as \"beta-fructofuranosidase,\" \"beta-fructosidase,\" or \"sucrase,\" plays an important role in sugar metabolism. Invertase catalyzes the hydrolysis of both the disaccharide sucroseand the trisaccharide raffinose. All invertase genes except SUC2 are located within telomere sequences. Although individual strains may carry any number and combination of SUC genes, the reference strainencodes only SUC2and most recent studies on invertase have focused on that gene.SUC2 encodes two different forms of invertase, external and internal. External invertase is a highly-glycosylated homodimer that is excreted into the periplasmic space, where the hydrolysis occurs. Only the monosaccharide products of the reaction, glucose and fructose, are transported into the cell. Internal invertase also forms a homodimer, but is not glycosylated and is localized to the cytoplasm. Internal invertase has no known function in sucrose fermentation or any other biological process. The two forms of invertase are translated from two distinct, differentially regulated mRNAs, which differ only in their 5'-ends. The 1.9 kb mRNA encodes the external form and specifies a leader peptide which directs the protein product into the secretory pathway. This signal sequence is missing in the 1.8 kb mRNA encoding the internal invertase. Although S288C produces both forms of invertase, for technical reasons, only the longer external form is currently represented in SGD.Internal invertase is synthesized constitutively at low levels, while external invertase is subject to glucose repression. Under glucose-repressing conditions, the Mig1p-Cyc8p-Tup1p complex binds directly to the SUC2 promoter, which is packaged into an array of evenly positioned nucleosomes. Several other factors contribute to the repression of SUC2, including Hxk2p, Grr1p, Reg1p, Glc7p and Gcr1p. Under inducing conditions, the nucleosomes are remodeled in a SWI/SNF-dependent manner. The SWI/SNF chromatin remodeling complex is necessary for both the initiation and the maintenance of SUC2 transcription.Invertase played a notable role in early research on basic enzyme function. The colloquial name \"invertase\" comes from the fact that a solution of sucrose polarizes light in the opposite direction from an equimolar solution of glucose + fructose. This \"inversion\" of sugar provided a straightforward functional assay which, along with the easy preparation of a periplasmic protein, made invertase a popular research subject among early biochemists. Many seminal works defining and describing enzymes, including those of Adrian Brownand Leonor Michaelis and Maude Menton, focused on invertase.Invertase also has a role in the food industry where it is used to produce fructose for use in confectionary. Fructose is often preferred over sucrose in candies with soft centers, as it is sweeter and less prone to crystallization.