Glycogen is a branched polysaccharide of high molecular mass that is used as a storage carbohydrate. In S. cerevisiae, glycogen is typically catabolized to glucose-1-phosphate and glucose by the Gph1p glycogen phosphorylase and the Gdb1p debranching enzyme. However, during sporulation, glycogen is rapidly catabolized to glucose by the Sga1p glucoamylase.The Gdb1p dual-activity glycogen debranching enzyme eliminates branchpoints in glycogen in a two-step process that includesthe transfer of a maltotriosylunit from the branchpoint to an adjacent alpha-1,4-glucosyl chain using its oligo-1,4 to 1,4-glucanotransferase activity, andthe subsequent hydrolysis of the residual alpha-1,6-linked glucose residue by its alpha-1,6-glucosidase activity. Once the branch is resolved, glycogen degradation continues by the action of a second enzyme, the Gph1p glycogen phosphorylase. GDB1 expression is regulated by stress-response elements, and is induced during late exponential growth phase and in response to various stresses, as are other glycogen metabolism genes. gdb1 null mutants are viable, but display increased accumulation of glycogen. No phenotypes corresponding to the mammalian glycogen storage disease III, associated with mutations in human glycogen debranching enzyme, have been identified for S. cerevisiae gdb1 null mutants.