CLB4 encodes a B-type cyclin that activates Cdc28p to promote the transition from G2 to M phase of the cell cycle. Progression through the cell cycle is a carefully regulated process that is conserved throughout eukaryotes. Periodic activation of cyclin-dependent kinasesare required for this process; the critical CDK involved in cell cycle progression in yeast is Cdc28p. Cyclins are the regulatory subunits that activate CDKs at the appropriate time in the cell cycle; they were first identified in sea urchins and named for their cyclical accumulation during particular phases of the cell cycle. CLN1, CLN2, and CLN3 encode the yeast G1 cyclins while there are 6 B-type cyclinsgenes involved in activation of S, G2, and M phases of the cell cycle. With the exception of CLN3, there are pairs of homologous cyclin genes that share common functions. Genetic interactions have shown that CLB3 and CLB4 may both be involved in DNA replication and spindle assembly as well as the G2/M-phase transition. Recent work demonstrates that Cdc28p-Clb4p facilitates spindle alignment by regulating the interaction of astral microtubules with subdomains of the bud cortex.CLB3 and CLB4 transcripts accumulate during S phase and G2. Like the other Clb proteins, Clb3p and Clb4p contain a destruction box motif in their amino termini, which may target them for ubiquitin-mediated degradation by the proteasome. It was inititally proposed that the Clb proteins play a role in the degradation of the G1 cyclins, but it was later shown that G1 cyclins are unstable in G1 phase, and Clb activity is not required for their degradation. There are excellent reviews by Lew et al.and Mendenhall and Hodgethat describe cell cycle control in S. cerevisiae in detail.