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Abstract

The fission yeast telomere shelterin complex includes the interaction Tpz1-Ccq1. Tel1 and Rad3 kinases promote telomerase recruitment to telomeres, possibly by phosphorylation of Ccq1. Current findings suggest that Ccq1 phosphorylation is essential to directly bind and recruit Est1, the regulatory subunit of telomerase. Ccq1 also recruits a Snf2/histone deacetylase (HDAC)-containing repressor complex (SHREC) by interaction with the SHREC component Clr3. The present investigation is intended to identify specific Ccq1 separation of function mutants that either disrupt Ccq1-Tpz1 and/or Ccq1-Est1 or Ccq1-Clr3 interaction. We characterize the Ccq1-Clr3 interaction through a mutagenesis approach utilizing truncation and point mutants. To date, we have identified that the C-terminus of Ccq1 is sufficient for interaction with Clr3, but known to be inadequate for interaction with either Est1 or Tpz1. On the other hand, the N-terminus of Ccq1 is known to be sufficient for interaction with Est1 and Tpz1, and as we have identified with Clr3 as well. Currently, we are generating additional protein truncation and point mutants to position the specific Ccq1-Clr3 interaction sites. Since telomere maintenance is well conserved among fission yeast and mammalian cells, the current study might give insight on telomere maintenance in humans.