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Structure of the Human Telomeric Stn1-Ten1 Complex

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The telomeric CST complex plays a central role in chromosome end capping and replication in budding yeast, and homologues of CST were identified recently in higher eukaryotes. The human CST (Ctc1, hStn1, hTen1) has been shown to play a role in telomere maintenance, but the extent of conservation across species has been in question because of low sequence identity (below 10% for Ctc1, the core subunit of the CST complex) and data suggesting subtle differences in function between complexes. We solved the high-resolution crystal structure of the human Stn1-Ten1 complex, which revealed striking structural similarity between the yeast and human CST complexes. We also showed using southern blots and fluorescence in situ hybridization experiments that disruption of the hStn1-Ten1 binding interface in vivo produces elongated telomeres and telomere defects in accordance with what has been previously observed for the yeast CST complex. Our results support structural and functional conservation of telomeric CST across species.

Keywords: CST Complex, Telomeres, DNA-binding proteins