

NMR and Modeling studies of RTBP1

Sung-Gun Ko¹, Joon shin¹, Eun Young Yu², In Kwon Chung², Wontae Lee¹

¹Dept. of Biochemistry, Yonsei University, ²Dept. of Biology, Yonsei University

Telomere-binding proteins (TBP) which have a limited sequence similarity, share a DNA binding motif present in the vertebrate c-Myb family of transcriptional activator. To understand structure-function of TBP, we initiated a pilot NMR study and modeling approach on rice telomere-binding protein 1(RTBP1) which specifically recognize the telomeric repeat sequence TTTAGGG found in plants. Based on heteronuclear NMR data, c-Myb like domains of RTBP consists of three helices including a HTH DNA binding motif. Molecular modeling based on NMR and biochemical data showed two aspartate residues recognize guanine and cytosine, and valine residue recognize hydrophobic patch of two methyl group from thymines. Other lysine residues were interacted with backbone phosphate groups of DNA.