

THE BOX C/D SNORNP ASSEMBLY FACTOR BCD1 INTERACTS WITH THE HISTONE CHAPERONE RTT106 AND CONTROLS ITS TRANSCRIPTION DEPENDENT ACTIVITY

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Biogenesis of eukaryotic box C/D small nucleolar ribonucleoproteins initiates co-transcriptionally and requires the action of the assembly machinery including the Hsp90/R2TP complex, the Rsa1p:Hit1p heterodimer and the Bcd1 protein. We present genetic interactions between the Rsa1p-encoding gene and genes involved in chromatin organization including *RTT106* that codes for the H3-H4 histone chaperone Rtt106p controlling H3K56ac deposition. We show that Bcd1p binds Rtt106p and controls its transcription-dependent recruitment by reducing its association with RNA polymerase II, modulating H3K56ac levels at gene body. We reveal the 3D structures of the free and Rtt106p-bound forms of Bcd1p using nuclear magnetic resonance and X-ray crystallography. The interaction is also studied by a combination of biophysical and proteomic techniques. Bcd1p interacts with a region that is distinct from the interaction interface between the histone chaperone and histone H3. Our results are evidence for a protein interaction interface for Rtt106p that controls its transcription-associated activity.