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CRYO-ELECTRON MICROSCOPY OF THE HUMAN R2TP, AN HSP90 CO-CHAPERONE COMPLEX

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This work has focused on the study of the structure of the human R2TP complex (hR2TP), an HSP90-co-chaperone. The R2TP complex was described for the first time in *Saccharomyces cerevisiae*. In this organism, the complex is formed by Rvb1p, Rvb2p, Tah1p and Pih1p proteins, and these components give the name to the complex. The hR2TP has a cochaperone function and interacts with the "heat shock protein 90" (HSP90) chaperone. R2TPHSP90 is involved in the biogenesis of the C/D box of small nucleolar ribonucleoprotein (snoRNP), the maturation of phosphatidylinositol-3-kinase related kinases (PIKKs) and the assembly of RNA polymerase II. How hR2TP is able to carry out the correct activation and assembly of these fundamental complexes at the cellular level is still unknown. The main objective of this work is improving our knowledge about the structure of hR2TP. In humans this complex is formed by the following proteins: RuvBL1, RuvBL2, RPAP3 and PIH1D1. Subsequently, the reconstituted hR2TP was analyzed by cryo-electron microscopy. In this presentation, the three-dimensional (3D) structural organization of the hR2TP complex will be discussed. From the structure of hR2TP it can be determined that RuvBL1 and RuvBL2 proteins

form a platform for the anchoring of RPAP3-PIH1D1. RPAP3 is fundamental in the recruitment process of the RuvBL1-RuvBL2 complex and also the HSP90 chaperone. Therefore, provided here is the first view of the structural architecture of the hR2TP complex, a first step towards understanding important cellular processes that govern the maturation of PIKKs, telomerase and the assembly of RNA polymerase II among others.

Biography

Hugo Muñoz-Hernández completed his PhD in Biochemistry from Universidad Autónoma de Madrid (2017). His PhD was on the topic, "Structural biology and characterization of the human R2TP, an HSP90 co-chaperone complex" at Centro de Investigaciones Biológicas del Consejo Superior de Investigaciones Científicas under the supervision of Professor Oscar Llorca. His expertise is in cryo-electron microscopy of macromolecular complexes. He has published articles in NAR, AIMS Biophysics, Cell Chemical Biology and Structure. Moreover, a publication in Nature Communications has been sent for second review (February 2018).

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