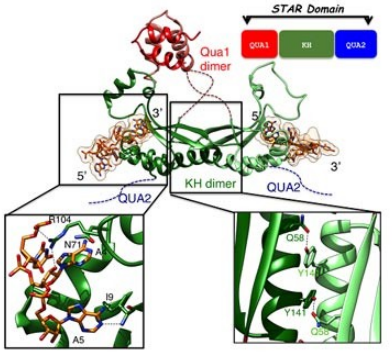
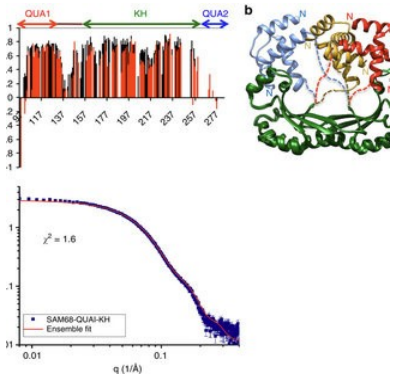
RCB – Kolloquium

Thursday, 29. February 2024, 14.00 Uhr
H 53



Structure of the RNA binding protein T-STAR in complex with its RNA target



Prof. Dr. Cycil Dominguez

University of Leicester

"Alternative Splicing, apoptosis and cancer: role of RNA structure, G-quadruplexes and splicing factors"

Alternative splicing is a very common mechanism in eukaryote to increase the proteomic diversity of an organism form a limited number of genes. More than 90% of the 20,000 human genes are alternatively spliced leading to an approximate 100,000 different protein isoforms. This process is tightly regulated by proteins called splicing factors that bind the pre-mRNA and either activate or inhibit specific splice sites leading to the inclusion or exclusion of specific exons in the mature mRNA.

Our laboratory investigates the mechanisms of alternative splicing regulation by splicing factors using structural biology and biochemical techniques. We have studied the splicing factor hnRNP F in complex with target RNAs and proposed that the role of hnRNP F in alternative splicing regulation is to compete with specific RNA structures called G-quadruplexes (pubmed.ncbi.nlm.nih.gov/20526337/); pubmed.ncbi.nlm.nih.gov/23275549/). We have then further characterised the role of G-quadruplexes in the splicing regulation of the Bcl-x pre-mRNA (pubmed.ncbi.nlm.nih.gov/27820800/ ; pubmed.ncbi.nlm.nih.gov/29156002/ ; pubmed.ncbi.nlm.nih.gov/36060245/).

We have also characterise the mechanisms of splicing regulation by another splicing factor Sam68 and the role threonine phosphorylation on its functions (pubmed.ncbi.nlm.nih.gov/26758068/ ; https://pubmed.ncbi.nlm.nih.gov/36537190/).

More recently, we have used 19F labelling of RNA and NMR to investigate the concurrent or competitive binding of pairs of splicing factor to RNAs (https://www.frontiersin.org/articles/10.3389/fmolb.2024.1325041/full).

Host: Prof. Dr. Remco Sprangers, Lehrstuhl für Biophysik-I. remco.sprangers@ur.de

Universität Regensburg

Biochemie-Zentrum Regensburg