

Identification of RNA G-quadruplexes and its role of neuronal functions in mouse brain

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G-quadruplexes (G4) are noncanonical four-stranded nucleic acid structures formed by guanine-rich sequences. Recently, a number of studies have demonstrated that RNAs containing G4 structures are involved in biological and pathological processes, including transcription, mRNA maturation, translation, and their relevance to G4-binding proteins. However, the detail function of G4 RNAs in neuron still elusive. In this study, to identify G4 RNAs in brain, we performed an RNA immunoprecipitation sequencing (RIP-seq) using a G4-specific antibody, named G4 RIP-seq. We found several mRNAs of genes that are likely relevant to neuronal function or diseases. In fact, those mRNA has several G-rich sequence motifs and we successfully determined 3D G4 structures of those motifs *in vitro*. Immunochemical assays of certain G4-binding protein, together with *in situ* hybridization of mRNAs suggested that cellular G4 RNA might be relevant to neuronal or neuro-physical function. In this presentation, we will discuss the recent results of this study.