Panagiota Kafasla, PhD

Institute of Immunology

BSRC "Alexander FLEMING"

Post-transcriptional control of Macrophage activation by HuR

Post-transcriptional control of the expression of inflammatory molecules is emerging as an efficient and rapid way to regulate the development and the resolution of inflammation. It requires the assemblies of RNA-binding proteins (RBPs) and non-coding RNAs onto specific elements on their RNA targets in Ribonucleoprotein particles (RNPs) which control mRNA maturation, turnover and translation. One of the key players, with an established role in translation and turnover of inflammatory mediators is the RNA-binding protein Elavl1/HuR.

HuR binds to AU-rich elements (AREs), and through this binding it has been suggested to act as a stabiliser of mRNAs, either by positively regulating their translation, or by inhibiting their decay. However, data have emerged suggesting also its role as a negative regulator of pathologic inflammation. Therefore, HuR appears to be a pleiotropic regulator of the expression of inflammatory mRNAs, a role slightly more complicated than its original assignment as an mRNA stabilizer.

To further understand the role of Elavl1/HuR in post-transcriptional control of inflammatory gene expression we performed transcriptome analysis followed by PAR-CLIP (Photoactivatable Ribonucleoside-Enhanced Crosslinking and Immunoprecipitation) on resting and activated bone marrow derived macrophages. Analysis of the RNA targets identified reveals differential contribution of HuR towards the development of macrophage activation.