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Exploring the underground of the RBP World: Riboregulation

RNA-binding proteins (RBPs) are critical effectors of gene expression, and as such their malfunction underlies the origin of many diseases. RBPs can recognize hundreds of transcripts and form extensive regulatory networks that help to maintain cell homeostasis. Our system-wide unbiased identification of RBPs (Castello et al., 2012) has increased the number of recognized RBPs into the four-digit range and revealed new paradigms: from the prevalence of structurally disordered RNA-binding regions with roles in the formation of membrane-less organelles (Castello et al., 2016) to unsuspected and potentially pervasive connections between intermediary metabolism and RNA regulation (Beckmann et al., 2015). In addition, we are gaining an increasingly detailed understanding of molecular mechanisms of RBP function, including riboregulation, the direct control of protein function by RNA (Hentze et al., 2018; Horos et al., 2019; Huppertz et al., 2022). I will discuss how we begin to understand new facets of the RBP World including the many newly recognised RBPs.

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