LOOKING FOR SPECIALIZED RIBOSOMES IN PLANTS. CHARACTERIZATION OF THE RIBOPROTEIN FAMILIES L10 AND L24

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Translation and its regulation play an important role in plant adaptation. Ribosomes have traditionally been considered passive molecular players regarding which RNA to translate. However, this view is changing due to studies showing that specific and heterogeneous ribosomes can have an active role regulating the translation of different RNA subpools in mammals and bacteria (*Genuth & Barna, 2019*). In plants, the possibilities for specialization are much higher, as each ribosomal family is encoded by two to seven paralogs and there are several hints in the literature pointing towards differential paralog roles. However, whether this heterogeneity provides selective translation of specific mRNAs under particular cell conditions has yet to be demonstrated.

To address this question, we are characterizing two ribosomal families, RPL10 and RPL24, which contain three and two paralogs, respectively, and that are ubiquitously expressed in Arabidopsis. Specific functions have been described for at least one paralog of each family and paralog mutants show different phenotypes as well (*Falcone Ferreyra et al., 2020; Zhou et al., 2010*)

We will provide evidence of phenotypic variance between paralog mutants in families RPL10 and RPL24 under control and abiotic stress conditions. To determine if these phenotypes are due to different RNA populations being translationally affected in each mutant, we have performed RNA-seq from total and polysomal RNA from WT and mutant plants. In addition, we are studying mutant complementation by Recombineering (*Brumos et al, 2020*), leveraging the system to exchange exons between paralogs maintaining each other´s regulatory elements therefore shedding light on whether they are functionally equivalent. We will present our progress regarding these objectives.

Brumos, J., et al. (2020). The plant cell, 32, 100–122; Falcone Ferreyra et al. (2013). Plant Physiology, 163(1), 378–391; Genuth, N. R., & Barna, M. (2019). Nat Rev Genet, 19(7), 431–452; Zhou et al. (2010). BMC Plant Biology, 10, 193.

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