Table S1. Examples of some plant 5'UTRs, their translational activity and advantages, and the used expression systems

| 5'UTR designation | Origin and plant species | Comparative translation efficiency (assessed according to reporter protein) | Expression system for experimental verification | Advantages | References |
|---|---|---|---|---|---|
| **GGR** | *Arabidopsis thaliana* | 1.5–2.5-fold higher (in leaves)*<br>1.3–28-fold higher (in stems)* | Stable expression in *Nicotiana tabacum* | n/d | 1 |
| **CA4** | *A. thaliana* | 9.7–22.9-fold higher* | Stable expression in *A. thaliana* | Preferential reporter accumulation in mesophyll cells | 2 |
| **Gmglnβ1** | *Glycine max* | 20-fold higher* | Transient expression in *N. tabacum* var. xanthi | n/d | 3 |
| **AtAGP21** | *A. thaliana* | 2.5-fold higher (ADH)** | Transient expression in *A. thaliana, Torenia fournieri,* and *N. tabacum* BY2 | Translational enhancer for several dicot species | 4 |
| **COR47** | *A. thaliana* | 1.7-fold higher (ADH)** | Transient expression in *A. thaliana* T87 and *N. benthamiana* | Translational increase under normal and stress conditions | 5 |
| **ADH** | *A. thaliana* | n/d | Stable expression in *N. tabacum* and *A. thaliana* T87 | Translational increase under normal and stress conditions | 6 |
| **Hsp81-3** | *A. thaliana* | 5-fold higher (RPS18C)** | Transient expression in *A. thaliana* T87 | Translational increase under heat shock conditions | 7 |

* Data of comparison of two reporter constructs with the same promoter fused to the tested 5'UTR and without it.

** Data of comparison of two reporter constructs with the same promoter fused to the tested 5'UTR or to a known translational enhancer (shown in parenthesis).

n/d, not determined.

References

1. Agarwal, P.; Garg, V.; Gautam, T.; Pillai, B.; Kanoria, S.; Burma, P. K. A study on the influence of different promoter and 5′ UTR (URM) cassettes from *Arabidopsis thaliana* on the expression level of the reporter gene β glucuronidase in tobacco and cotton. Transgenic Res. 2014, 23(2), 351-363. doi: 10.1007/s11248-013-9757-9. Epub 2013 Sep 27.

2. Williams, B.P.; Burgess, S.J.; Reyna-Llorens, I.; Knerova, J.; Aubry, S.; Stanley, S.; Hibberd, J.M. An untranslated cis-element regulates the accumulation of multiple 1 C4 enzymes in *Gynandropsis gynandra* mesophyll cells. Plant Cell. 2016, 28(2), 454-465, DOI: https://doi.org/10.1105/tpc.15.00570.

3. Ortega, J.L.; Wilson, O.L.; Sengupta-Gopalan, C. The 5′ untranslated region of the soybean cytosolic glutamine synthetase β 1 gene contains prokaryotic translation initiation signals and acts as a translational enhancer in plants. Molecular genetics and genomics 2012, 287(11-12), 881-893.

4. Matsui, T.; Matsuura, H.; Sawada, K.; Takita, E.; Kinjo, S.; Takenami, S.; Ueda, K.; Nishigaki, N.; Yamasaki, S.; Hata, K.; Yamaguchi, M.; Demura, T.; Kato, K. High level expression of transgenes by use of 5′-untranslated region of the *Arabidopsis thaliana* arabinogalactan-protein 21 gene in dicotyledons. Plant Biotechnol. J. 2012, 29, 319–322.

5. Yamasaki, S.; Matsuura, H.; Demura, T.; Kato, K. Changes in polysome association of mRNA throughout growth and development *in Arabidopsis thaliana*. Plant Cell Physiol. 2015, 56(11), 2169-2180

6. Ueda, K.; Okawara, R.; Yamasaki, S.; Sanada, Y.; Kinoshita, E., Yoneda, A., Demura, T.; Kato, K. Efficient transgene expression by alleviation of translational repression in plant cells. J. Biosci. Bioeng. 2014, 118(4), 434-440.

7. Matsuura, H.; Shinmyo, A.; Kato, K. Preferential translation mediated by Hsp81-3 5′-UTR during heat shock involves ribosome entry at the 5′-end rather than an internal site in Arabidopsis suspension cells. J. Biosci. Bioeng. 2008, 105(1), 39-47.