



Cell-Free

Protein Synthesis Kits Comparison

Syn-Xpress™ a highly efficient TX-TL machinery

Keïta Jondot¹, Marion Gransagne¹

¹: Synthelisis Biotech- Biopolis building - 5, avenue du Grand Sablon 38700 Grenoble - La Tronche, FRANCE - www.synthelisis.com (marion.gransagne@synthelisis.fr)

The Syn-Xpress™ kits are composed of a master mix containing an E. coli lysate and an adapted energy mix. Based on the 15 years of Synthelisis' expertise in this field, it will allow you to produce your protein of interest in a few hours.

In this study Syn-Xpress™ kit is compared to other E.coli-based CFPS kits available on the market. Measurement of the fluorescence of our Syn-GFP reporter enables us to compare the different yields obtained. Each kit is used under the expression conditions (incubation time and temperature) recommended by the supplier.

MATERIALS AND METHODS

- CFPS kits (A,B...) including our Syn-Xpress kit
- DNA template : pIVEX_His-Syn-GFP-StrepII
- 96-well plate
- Plate reader (VANTastar from BMGLabtech)

1. Thaw all reagents on ice.
2. Assemble the 50µL CFPS reactions according to manufacturer's recommendations. Each reaction is performed as triplicates. For our kit no assembly is required !
→ easy handling

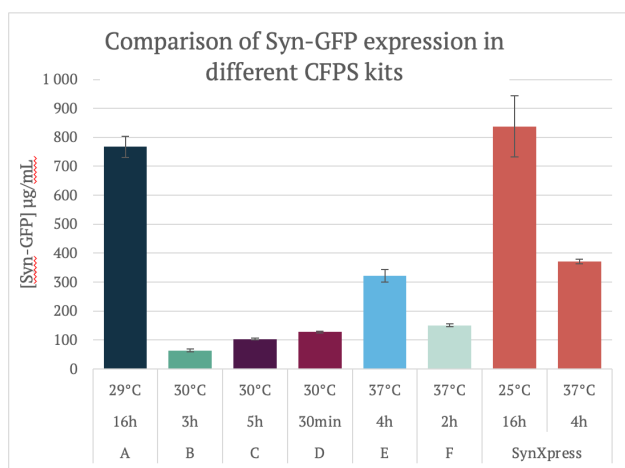
3. Addition of DNA template.
4. Incubation of the reaction in the VANTastar at the required temperatures (25°C, 30°C or 37°C) with agitation. Measurement of Syn-GFP fluorescence ($\lambda_{excitation} = 470-15 \text{ nm}$ | $\lambda_{emission} = 512-20 \text{ nm}$) to follow protein synthesis.

RESULTS AND DISCUSSION

Results show that yields depend on the kits and expression conditions used.

Higher yields are obtained for overnight incubations (16h) at low temperature. However, shorter incubations of 4 hours at 37°C with Syn-Xpress kit, are sufficient for screening purposes.

Syn-Xpress™ kits reach yields higher than 750 µg/mL of Syn-GFP, surpassing the best kit on the market.



CONCLUSION

Syn-Xpress™ achieves yields higher than the best kit available on the market (>750µg/mL of Syn-GFP). This kit can be used for fast screening with incubation at 37°C for 4 hours or for batch production at 25°C overnight. It is a very easy to handle system as it just requires DNA addition in a master mix.