

Heterologous expression and purification of the recombinant protein TROL for antibody production

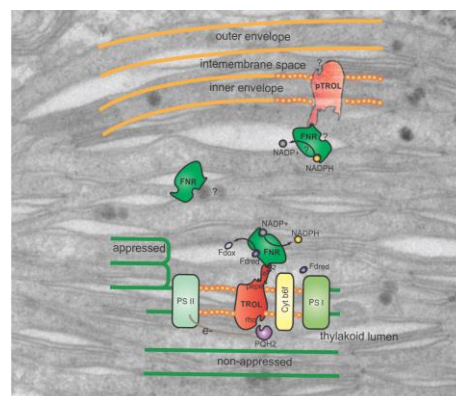
INVENTION

The protein TROL (thylakoid rhodanase-like) plays an important role in vascular plant photosynthesis. TROL tethers the flavoenzyme ferredoxin-NADP(+) oxidoreductase (FNR) that is required for the final electron transfer in photosynthesis. By controlling the contribution of the TROL, it is possible to study its impact on photosynthetic energy conversion and consequently plants growth.

Scientists from the Laboratory for Molecular Plant Biology and Biotechnology at the Ruđer Bošković Institute (RBI) have developed the protocol for acquiring specific antiserum targeted toward the thylakoid membrane protein TROL, which is an integral part of photosynthetic apparatus and involved in its regulation. We are ready to offer either purified antigen for immunization, or ready immune serum.

APPLICATION

1. Scientific research (facilitate research),
2. Diagnostics (ELISA), compartment marker antibodies (thylakoids, photosynthetic electron transport), chloroplast dual localization marker (thylakoids and inner envelope membrane), native protein electrophoresis and Western detection,
3. Development of new plant mutants – antibody needed for recognition of the final product.



The dual localization of TROL and its proposed interactions with FNR superimposed onto EM image of Arabidopsis chloroplast (Vojta et al., Int J Mol Sci, 2018; 19(2):569)

ADVANTAGES

- TROL antibody enables detection and visualization of the TROL protein and corresponding protein complexes in thylakoids and in the inner envelope of chloroplasts,
- Utilization of the TROL antibody will enable further experimental insights into electron partitioning at the end of the photosynthetic electron transport chain,
- There is no commercially available TROL antibody.

STAGE OF THE DEVELOPMENT

The method for the production of the antigen is validated and tested multiple times in our laboratory. Results have been published in respected scientific journals.

OPPORTUNITY

The technology is available for licensing. The RBI is seeking for a company ready to use purified protein for their in-house antibody production and/or to sell the finished product (anti-TROL serum). The RBI research group is willing to adapt to the company's needs/suggestions and to collaborate at any level of antigen and/or antibody production.

IP STATUS AND PUBLICATIONS

Jurić, S.; et al. Tethering of ferredoxin:NADP⁺ oxidoreductase to thylakoid membranes is mediated by novel chloroplast protein TROL. *Plant J.* 2009, 60:783-794. Vojta, L. and Fulgosi, H. Topology of TROL protein in thylakoid membranes of *Arabidopsis thaliana*. *Physiologia Plantarum*, Special Issue on: "Photosynthesis". In press.

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