

## FOLATES EVALUATION

Vitamin B9, or folate, is an essential food component of human diet.

The present work aims at the valorisation of residual agricultural biomasses for the production of folates by using tailored microbial cell factories.

We engineered *Saccharomyces cerevisiae* cells to unlock the production of the two main building blocks of folate, 4-Aminobenzoic acid (pABA) and dihydropteridine.

We did a full characterization of the folates produced by our yeast strains in two different growth conditions.

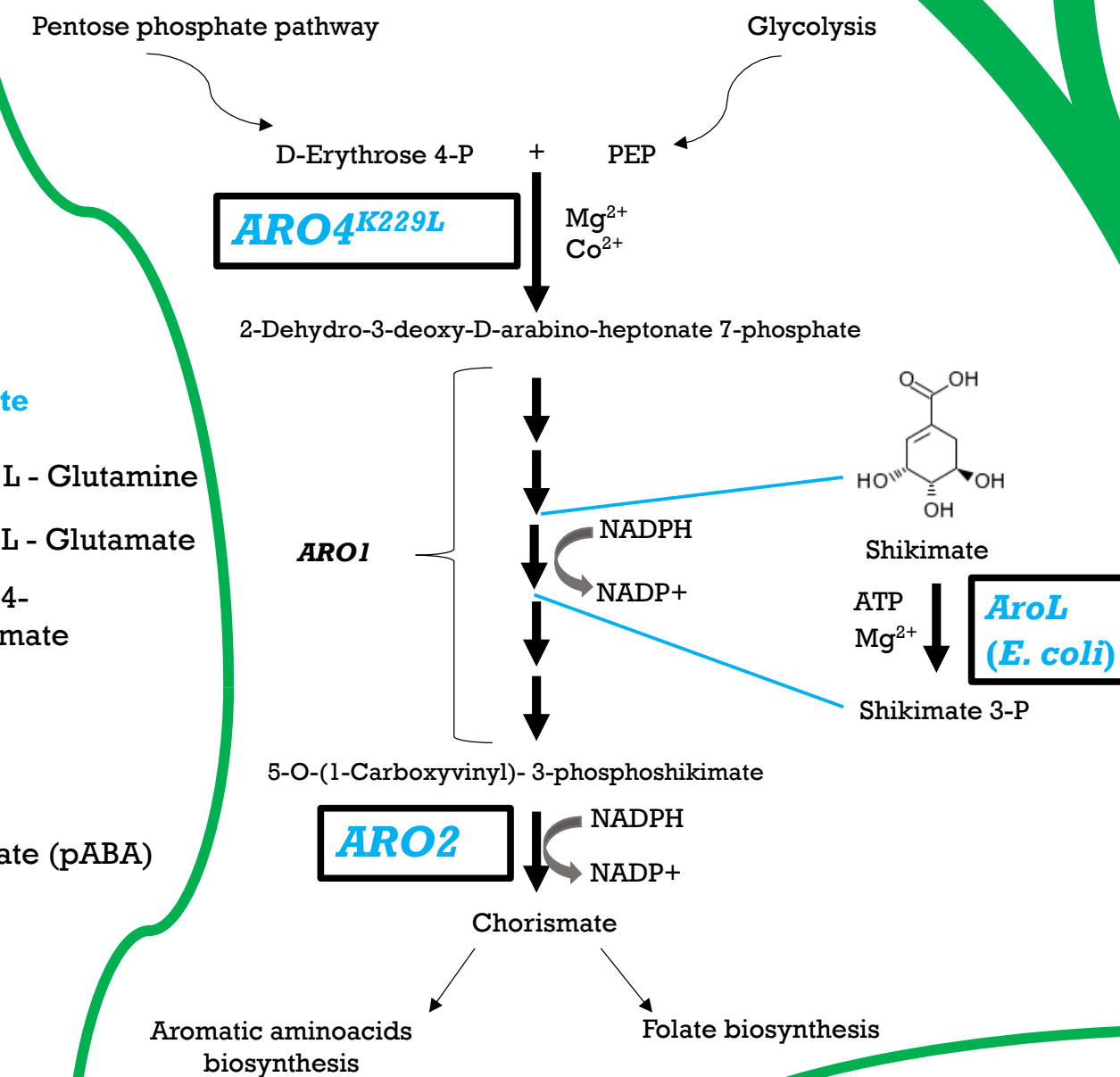
## Development of a biobased microbial process for Vitamin B9 production

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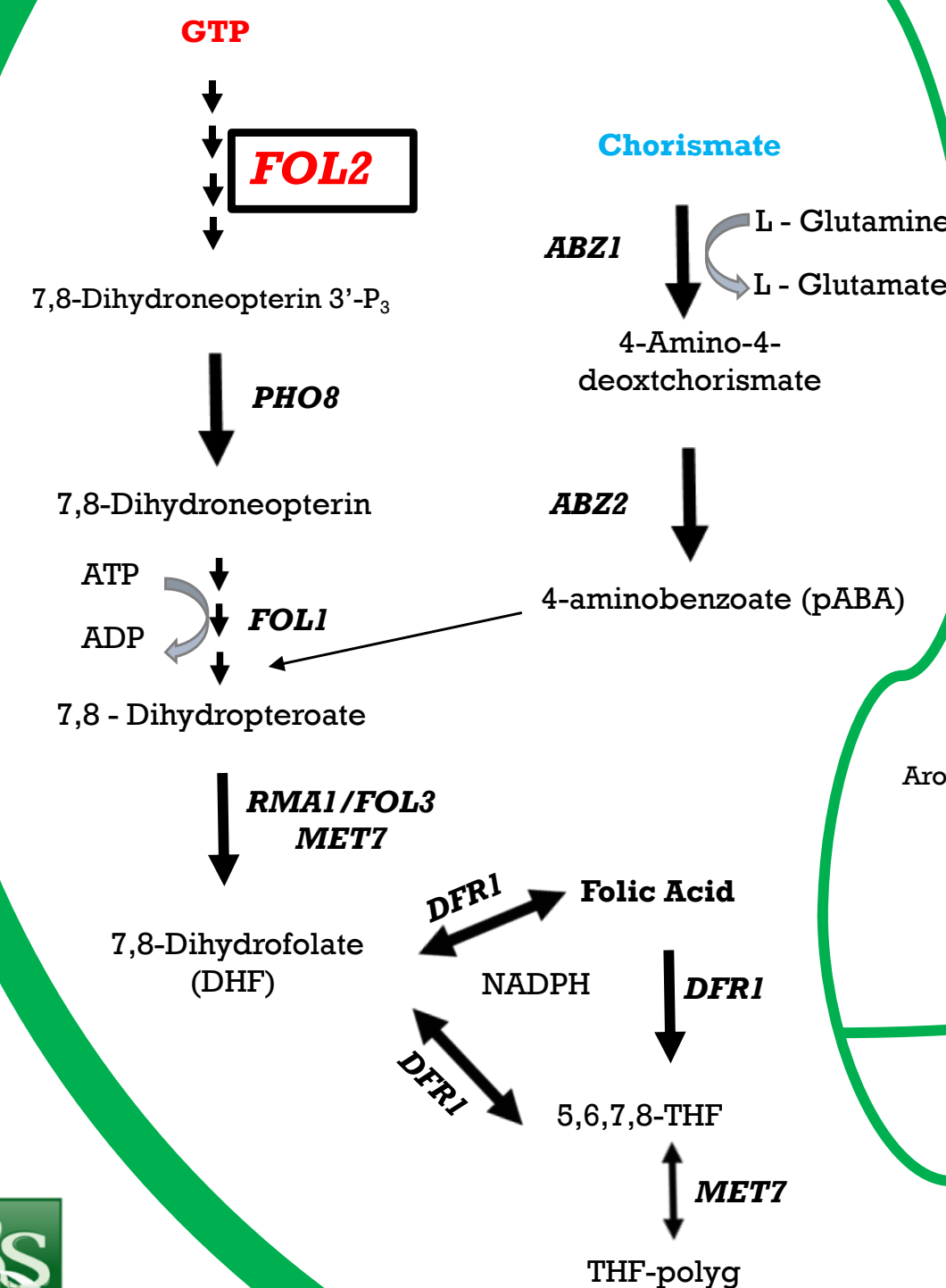
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### ENGINEERING

#### Shikimate Pathway



#### Folate Pathway

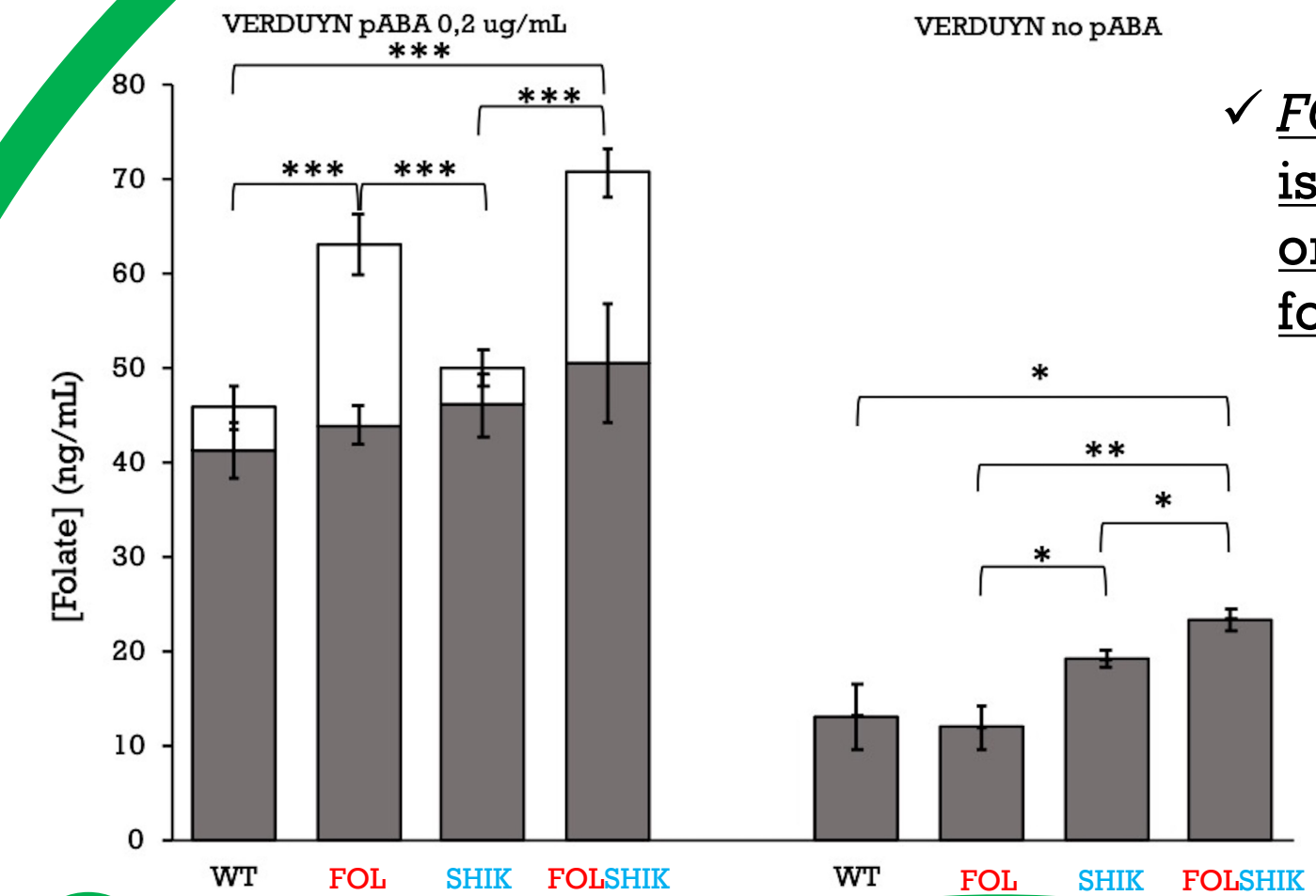


STRAIN NAMES:

FOL → FOL2 is overexpressed

SHIK → ARO4<sup>K229L</sup>,  
AroL and ARO2 are overexpressed

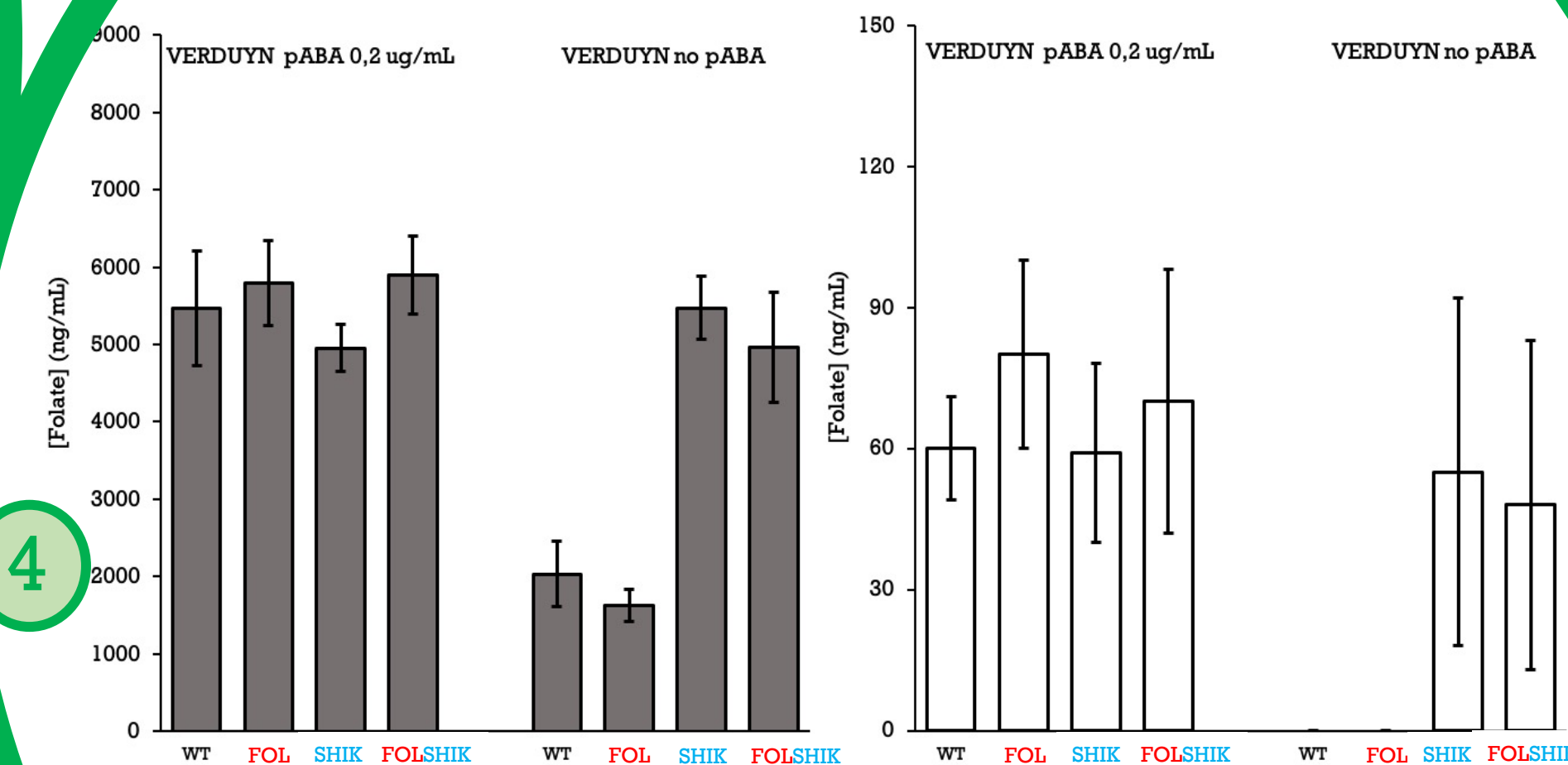
✓ The extracellular poly-glutamate accumulation is similar in all the strains.



✓ *FOL2* overexpression is crucial to increase only the free folates forms.

### MEDIA COMPOSITION AND PRODUCTION

✓ In the absence of pABA, the overexpression of the shikimate pathway seems pivotal for growth and production.



The shikimate pathway is a metabolic bottleneck to be targeted in order to further foster yeast folate production.

