

DIRECTED EVOLUTION OF RUBISCO IN *ESCHERICHIA COLI*.

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LOCATION:
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GORDON RESEARCH CONFERENCE

Expressing the photosynthetic CO₂-fixing enzyme Rubisco in foreign hosts has been shown to be problematic.

In *Escherichia coli* only bacterial forms of the enzyme can be successfully assembled, others tend to aggregate and form inclusion bodies. Recent literature has shown solubility and functional assembly of recalcitrant proteins in *E. coli* to be close in sequence space.

We have developed a high-throughput assay for in-vivo Rubisco activity, based on the introduction of phosphoribulokinase and Rubisco into *E. coli* and complementation of a glycolytic deletion as described previously [Morell et. al. (1992) Aust. J. Bot. 40: 431-411]. Application of this assay has allowed us to evolve foreign Rubiscos towards functional assembly in *E. coli* and may be adapted in the future to selection for improvements in Rubiscos catalytic properties.

