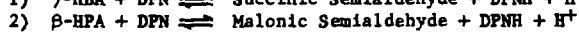
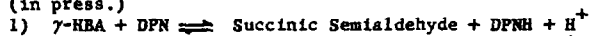


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## Biochemistry

THE INDUCTION OF TWO SIMILAR ENZYMES BY ONE INDUCER. A TEST CASE FOR SHARED GENETIC INFORMATION. Marshall W. Nirenberg (intr. W. B. Jakoby.) Natl. Insts. of Health, Bethesda, Md.

This investigation asks whether a portion of one gene contains information for the synthesis of a protein subunit which might be an integral part of two or more enzymes. A strain of Pseudomonas fluorescens formed an inducible  $\gamma$ -hydroxybutyric acid dehydrogenase (Reaction 1) when grown upon  $\gamma$ -hydroxybutyric acid ( $\gamma$ -HBA), and an inducible  $\beta$ -hydroxypropionic acid dehydrogenase (Reaction 2) when grown upon  $\beta$ -hydroxypropionic acid ( $\beta$ -HPA) Nirenberg, M. W. and Jakoby, W. B., J. Biol. Chem. (in press.)



An attempt was made to induce the reversible  $\gamma$ -HBA dehydrogenase by both the reactant and the product of the reaction; only  $\gamma$ -HBA was effective. A series of mutant strains blocked in reaction 1 were obtained. Strikingly high  $\beta$ -HPA dehydrogenase levels were found in these strains when  $\gamma$ -HBA was added. Analysis demonstrated that  $\gamma$ -HBA at low concentrations induced the formation of  $\gamma$ -HBA dehydrogenase, and, at higher concentrations, induced the formation of both  $\gamma$ -HBA and  $\beta$ -HPA dehydrogenases. Genetic information did not appear to be shared; instead  $\gamma$ -HBA was found to serve as an inducer for two similar enzymes in different metabolic pathways.